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ENERGY AND WATER DEVELOPMENT APPROPRIATIONS FOR 1996

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Energy and Water Development Approp...

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BEFORE A

SUBCOMMITTEE OF THE

COMMITTEE ON APPROPRIATIONS

HOUSE OF REPRESENTATIVES

ONE HUNDRED FOURTH CONGRESS

FIRST SESSION

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1995

SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT

JOHN T. MYERS, Indiana, *Chairman*

HAROLD ROGERS, Kentucky
JOE KNOLLENBERG, Michigan
FRANK RIGGS, California
RODNEY P. FRELINGHUYSEN, New Jersey
JIM BUNN, Oregon

TOM BEVILL, Alabama
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NOTE: Under Committee Rules, Mr. Livingston, as Chairman of the Full Committee, and Mr. Obey, as Ranking Minority Member of the Full Committee, are authorized to sit as Members of all Subcommittees.

JAMES D. OGSBURY, BOB SCHMIDT, and JEANNE WILSON, *Staff Assistants*

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ENERGY AND WATER DEVELOPMENT APPROPRIATIONS FOR 1996

HEARINGS

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ENERGY AND WATER DEVELOPMENT APPROPRIATIONS FOR FISCAL YEAR 1996

WEDNESDAY, MARCH 8, 1995.

DEPARTMENT OF ENERGY

ENVIRONMENTAL MANAGEMENT

WITNESS

THOMAS P. GRUMBLY, ASSISTANT SECRETARY FOR ENVIRONMENTAL MANAGEMENT

OPENING REMARKS

Mr. MYERS. The committee will come to order. This afternoon we are going to hear on the environment restoration and waste management. Secretary Grumbly, we are pleased to have you. Your prepared statement will be put in the record, and you may proceed as you care.

Mr. GRUMBLY. Thank you very much, Mr. Chairman. Mr. Chairman, members of the subcommittee, I appreciate very much the opportunity to discuss DOE's Environmental Management Program and the form of its 1996 budget request and thank you very much for including my statement in the record.

Before you, and I know you haven't had a chance to take a look at it, but I have three documents that I hope you will at least take some opportunity to glance at over the next couple weeks. First is what we call the English language version of our budget, Environmental Management 1995, which hopefully translates all of the dollars and projects that begin with Ks and Ys and other things into common sense so you can understand that.

Secondly, I think an important book called, "Closing The Circle on the Splitting of the Atom," which really tries to detail particularly for people who are under the age of 45, like myself, who didn't understand what we did during the Cold War in order to——

Mr. MYERS. I have heard of the circle being broken, but——

Mr. GRUMBLY. We are trying to close it with the stopping of nuclear weapons production in 1989. Thankfully, I think we are on the road to trying to fulfill the legacy of Oppenheimer and Bohr and other folks who want to make this right. It will give you a good overview.

Third, you have got something called the Fiscal Year 1994 Review from our office, which is our attempt to make sure all of you understand that we are measuring our field offices very carefully, and we will talk a little bit about some of the impacts of some of this in my presentation.

It arises in part out of the request that this committee made last year to me that we really keep track of the strategic plan that we outlined, and both you and Mr. Bevill at that time asked me to make sure that I was managing our program in line with our strategic plan, and I think we are.

INTRODUCTION

Mr. Chairman, members of the subcommittee, I think that this year the Department of Energy's Environmental Management Program has really turned the corner. We have turned the corner on the budget. For the first time in the program history, this year's request is an absolute reduction in the budget given the same scope of work.

Though our total program request of $6.6 billion appears greater than last year, this is only because significant new responsibilities, over $840 million worth of spending was transferred to the Environmental Management Program from the Department's Defense Programs. Without these newly added tasks, mostly the Savannah River site in South Carolina, our request represents an absolute 4 percent decline or approximately a $235 million reduction from last year's request.

You can see from the chart over here just in terms of scope what we are dealing with, that we actually have a request that is below last year's request, and what puts it above last year's request are all the materials that have been transferred to us from other parts of the Department. So, for example, when you and your colleagues look at Defense Programs requests you have to take out the $840 million that was transferred to us from Savannah River before you really consider whether they have an add or subtract, so it is a transfer inside the Department.

RESULTS

We believe we have turned the corner on results. For the first time in the program's history we are devoting more of our cleanup resources to actual on-the-ground cleanup than to study. In 1994, 46 percent of our actual cleanup dollars were going to remediation. In 1995 that is up to 53 percent, and in 1996, if you were to approve our budget request, that would go to 69 percent of the actual cleanup dollars.

We have turned the corner on efficiency. We are proposing massive reductions in our budget request while proposing really a larger program in terms of what we want to accomplish for this year. We have implemented, I think, some ambitious management changes to improve productivity, accounting for a leaner program, and more than $2 billion in savings between fiscal years 1994 and 1996.

And, perhaps most importantly, I think we have turned the corner on setting priorities. This year's request reflects a fundamentally different strategy to address the most urgent risks first and to focus our limited resources on getting results rather than trying to do everything at one time.

Today I would like to briefly, and I emphasize briefly, outline our program, our accomplishments, the challenges we face, and most importantly the profound changes that are under way in dealing with the environmental legacy of the Cold War. But before I do, let me point out the significant role that the Environmental Management Program is playing in contributing to a leaner Federal Government and deficit reduction in line with the President's proposed budget.

PROPOSED REDUCTIONS

The President has proposed, as you know, to reduce the entire departmental budget by $10.6 billion over the next five years. The Environmental Management Program budget reductions will account for the largest portion of this cut. For fiscal years 1997 through 2000, the President's request will be reduced by $4.4 billion in outlays, which translates into approximately $5.5 billion less in requested budget authority than was previously estimated in administration plans. These reductions are significant, but I believe that they will be achievable without fundamentally altering our moral responsibility to deal with the legacy of the Cold War.

However, I think we should make no mistake that there are limits to how large and how fast, particularly how fast, budget reductions can happen, without jeopardizing our ability to meet our legal and moral obligations to protect human health and safety. About 65 percent of our program budget is driven by compliance with legal obligations, and about 25 to 30 percent of the budget is governed by vital, although not legally mandated, responsibilities to care for the safety of our nuclear materials. This leaves little room for further efficiency gains beyond the ones that we have already outlined, and I think it establishes a point beyond which further budget cuts will go directly into the essence of our missions and undermine our efforts.

Our responsibilities include, and I think it is important to emphasize this, they include some of the Nation's most urgent environmental risks by anybody's stretch of the imagination: hundreds of underground tanks of liquid, high-level radioactive waste in South Carolina, Washington, Idaho, and upstate New York—most of these tanks are the size of the Capitol dome, with a capacity of a million gallons and some tanks at Hanford until recently were at risk for explosions—as well as intensely radioactive spent nuclear fuel and weapons grade plutonium, the stuff of nuclear warheads.

As I will describe in a minute, this program does cleanup, but it does a lot more than cleanup, and I think it is important to emphasize that. It is really a lot more than just a cleanup program. Given the seriousness of the responsibilities that we have, there is not a great margin for error or miscalculation. We succeed partly when bad things don't happen in the United States of America.

OVERVIEW OF THE ENVIRONMENTAL MANAGEMENT PROGRAM

Let me briefly describe the program as it exists. The Department's Office of Environmental Management, which was established in late 1989, manages the largest environmental stewardship program in the world. We have over 130 sites and facilities across the Nation, encompassing 10,000 projects, estimated to cost over $200 billion over the next several decades.

Most broadly, our job is to safely operate vast installations, for example, Hanford is 500 square miles, Idaho is 800 square miles, Savannah River is 300 square miles, extraordinarily dangerous materials, and massive complex facilities and unparalleled operations. This task is far easier described than carried out.

To illustrate, we are dealing with a wide variety of threats and risks such as the following: First, contaminated drinking water, soils and surface water; second, the theft or diversion of nuclear weapons material, for example, plutonium and highly enriched uranium; and third, literally thousands of radioactively contaminated buildings that must be stabilized and eventually decontaminated.

We simultaneously try to satisfy a wide variety of demands. First, compliance with State and Federal laws and regulations and associated agreements that the Department has signed up to, mostly prior to 1993. Secondly, worker safety and health protection standards derived from the nuclear industry and departmental practices; and third, short and long-term technology development needs, the seed corn that is necessary for creating effective and affordable environmental remediation systems for the future and which will really be the key for deciding how much of our land can be returned to anything other than very restricted use.

ACCOMPLISHMENTS

We are making, I think, some significant strides in reducing the environmental and public health risks and hazards from more than 50 years of nuclear weapons production, testing, and research. For example, in the last year we began to stabilize inventories of pyrophoric plutonium. As you know, plutonium can be extremely unstable. It can explode and burn spontaneously under certain conditions, which is exactly what happened in two fires at Rocky Flats in Colorado in 1957 and 1969.

We treated 40 million gallons of hazardous wastewater associated with the K–25 central neutralization facility at Oak Ridge and we converted 700,000 gallons of high-level radioactive waste into safer, more stable dry calcine form at our site in Idaho. There are some people who have said we haven't gotten anything for our money in the last five years. I think they are misinformed. I don't think they have entirely done their homework. We have done a lot.

Since the establishment of the program in 1989, and I refer you to the chart over on your right, we have treated a total of 4.2 billion gallons of ground and surface water, which is enough to fill the reflecting pool between the Lincoln Memorial and the Washington monument 624 times. We have also removed more than 30 million cubic meters of contaminated soils and uranium tailings, enough to fill the inside of Mackey Arena where the Boilermakers play 156 times, which is exactly what the Indiana State Sycamores might like to do there. Or put another way, there is enough to cover the track and infield at the Old Brickyard 10 stories high.

Mr. MYERS. Now, I understand what you are talking about.

Mr. GRUMBLY. Which is not where we put it.

Mr. MYERS. You finally put it in language we understand.

Mr. GRUMBLY. I am trying, Mr. Chairman.

MEETING COMMITMENTS

Despite this progress, we recognize that a whole lot remains to be done. To manage this program, we are setting goals and meeting them. Last year, Mr. Chairman, this subcommittee asked what yardstick Congress should use in measuring this program, and at that time we provided to the subcommittee a copy of our strategic plan, which laid out our commitments for 1994 and 1995.

I am proud to report that we essentially met or exceeded virtually all of the commitments that we promised you last year. We didn't do everything. We are not perfection, but I think we made major progress against the commitments we made. But we can't afford to rest on the accomplishments we made.

As I said, much remains to be done. We have more results that we are committed to getting in fiscal year 1996. For the coming year, we plan to finally begin the operation of the Defense Waste Processing Facility at the Savannah River site, which will transform this highly toxic and radioactive waste into stable glass logs. We will complete the stabilization of the inventories of plutonium at the Rocky Flats site that present a fire hazard, and we will continue to upgrade the storage of spent nuclear fuel to prevent worker and environmental exposure.

I set six priorities when I came in May 1993. You can see them across the bottom. Reduce urgent risks in this complex, deal with worker safety, get more results, increase managerial control, focus our technology program, and improve the relationships that we have with the public.

In the yellow is my own self-estimate of where we are. You can see I don't think that we are close to perfection at this point, but I do think we are making progress. I think that with the 1996 and 1997 budgets that we have proposed that we have the opportunity to make a lot of progress against these problems using less resources than we have spent in the past.

CHANGING THE WAY WE DO BUSINESS

We recognize that this program has been inefficient and that is why one of my major goals has been to increase the managerial accountability of this program. It is a difficult and daunting task, but I want to let you know that we are prioritized and we do have a good sense of where it is that we want to go. Our 1996 budget request, as I said, is approximately $6.6 billion, and this includes $843 million in funding for significant new responsibilities at three sites which have been transferred from the Department's Defense Programs office—the Savannah River site in South Carolina, the Mound plant near Dayton, Ohio, and the Pinellas plant near Clearwater, Florida—as well as several other high-risk facilities that were transferred to us beginning this fiscal year from the Energy Research Program.

The requested amount will allow us to carry out our legal obligations during fiscal year 1996 with a few exceptions that we have already begun working with State regulators to resolve. However, after this fiscal year, even with the continued productivity and savings that are expected, I think there will be a gap between available resources and requirements, and I would like to explain how we plan to meet our legal and moral obligations, given the declining resources that we know we are going to have.

RECOMPETING CONTRACTS

In the previous administration when our program was created, the necessary ramping up of budgets was, frankly, carried out in an organizational environment in which cost was no object. We inherited a system of nuclear weapons production in which managing the cost of that complex was really not high on the agenda.

We recognize that this is no longer the case. We are making substantial changes in our management practices in order to increase the efficiency and to reduce the costs. For example, we are recompeting and renegotiating over $30 billion worth of contracts to include greater incentives for outstanding performance and to ensure that our contractors, not the taxpayers, take on a larger share of the risks associated with doing business.

This is the largest single recompetition in the history of the Department of Energy and the Atomic Energy Commission.

WORK FORCE REDUCTIONS

We are reducing the number of contractor employees by nearly 18,000 over the next 18 months, which will restore the number of employees at the sites to the levels they were at full production capacity. We are doing this even though we recognize that we don't have to lay off 18,000 in order to meet the President's budget goal. But if you take a look at the downward ramp that we all know we are on, we want to essentially jump over fiscal year 1996 and get to a level of employment at our sites that can be sustained for a longer period of time. So fundamentally we don't want to cut the tail of the cat more than once here.

It is too painful for the communities who are involved to do this and we think it is better if we can get on with it and get down to the level of employment that we really need to have for the long run.

RISK RELATED PLANNING

We will continue, and in fact, we will increase our use of risk-based assessments to determine where to allocate resources so that we can address the urgent risks first.

We are on schedule to deliver the required report to Congress this June. The Senate Energy Committee in the fiscal year 1994 appropriations bill or authorization bill basically told us that we needed to present a risk-based program to the Congress in time for the 1997 budget, and we are on schedule to do this.

These initiatives are ambitious. In fact, I think if you compare our management goals to those of some of the major Fortune 500 companies, we are pushing the limit already of what an organization can achieve in terms of efficiency gains.

When I talked to former Secretaries of Defense and Secretaries of Energy and the heads of major Fortune 500 companies, like Secretary Schlesinger, Norm Augustine from Martin Marietta, their basic response to the program that we have here in terms of becoming more efficient is you are really at the outer edge of what you can realistically expect to do.

RENEGOTIATING COMPLIANCE AGREEMENTS

We are also changing the way we do business with regulators. To ensure that we continue to meet our legal obligations, we are working with regulators to change our compliance agreements that apply to the Department. Let me take a moment to emphasize this point.

There is a lot of talk about changing our budget and changing our laws and we are very interested in working with the Congress on both of these types of changes, but we need to be clear about one thing, and that is unless and until the laws are actually changed, we are duty bound to honor them. I cannot pick and choose the laws that we obey, and the Department is committed to complying with the laws that apply to its sites and operations.

When Secretary O'Leary and myself took these jobs, we took oaths of office to uphold the Constitution and to faithfully execute the laws of the land. We take that oath very seriously, and so, members of the committee, I think we can and we should have the debate about the laws by which we are governed, particularly the environmental statutes to see whether they really make sense.

I just testified on Monday on the Senate side about contemplated changes to increase the consideration of risk in the environmental laws. I also have long supported changes in Superfund that would make it work better and cost less, and we need to make sure that those changes are, in fact, enacted this year. For now I think we are in pretty good shape.

I am happy to report that we have substantially increased our compliance from approximately 75 percent of our milestones in 1993 to about 87 percent in 1994 and 1995, so in only two years we have cut in half the number of missed compliance milestones at our sites. For fiscal year 1996, if we are appropriated the requested funding level we expect to miss only about 2 or 3 percent of our legal milestones and this is better than most Fortune 500 companies do. However, as I said, the outyears are a major problem, and we are working vigorously with States to fix these problems.

Many of the agreements were signed during a climate that was much different from the one we have today. Some of the milestones and schedules for completion are technically unworkable. Recognizing this, it is a reasonable and, indeed, a sensible thing to do to work cooperatively with the States, stakeholders and the EPA to renegotiate those agreements as appropriate to align them more with current fiscal reality. Also our goal in negotiating these agreements is to ensure that they will achieve the greatest risk reduction and risk prevention per dollar spent.

CONCLUSION

Let me conclude. Through ambitious changes in managing our program, significant cost savings have already been realized without any negative impact on the amount of work we are accomplishing, but the story is only beginning. The task before us in dealing with the environmental mortgage of the Cold War will not simply go away and many of the risks we face cannot be put off until tomorrow. We have to continue to address the urgent risks that require immediate attention as well as the long-term persistent threats that will pose hazards and cost money far into the future.

The long-term dimension of our program is a lot like the transmission advertisement on television. We can pay some now or we can pay a lot more later. Our fiscal year 1996 request represents an absolute reduction in what we are asking for relative to an increased work scope, and it reflects our commitment to meet our responsibilities as affordably as possible.

We will continue to seek and capitalize on opportunities to increase efficiency and productivity, but I think there is a line beyond which savings may come at a price of safety and it will be my responsibility to make sure that you understand where that line is. Thank you very much. I appreciate your attention.

PROPOSED RESCISSIONS

Mr. MYERS. Well, thank you, Mr. Secretary. You have covered a lot. Those charts are very busy charts. From this distance I guess, especially the environmental management strategic goals for the commitments for 1994. I think I understood what you were saying about the amount of completion.

Mr. GRUMBLY. Would you like me to go through them with you?

Mr. MYERS. No, no thank you. I say it is too busy.

Mr. GRUMBLY. I apologize for the "busyness".

Mr. MYERS. We had to come up with some rescissions a couple weeks ago, with some recommendations for rescissions, which will probably be on the Floor of the House next week. We took some $145 million out of your programs out of a $6 billion program, and one where you already had $2 billion, I believe, still uncommitted, unobligated. There have been some press releases coming out. I don't think I saw you quoted particularly.

Mr. GRUMBLY. Oh, I was.

Mr. MYERS. You were?

Mr. GRUMBLY. Yes, I was.

Mr. MYERS. Then you were guilty.

Mr. GRUMBLY. Right, I don't want to escape.

Mr. MYERS. We may have been wrong, I don't know, but we took another $28 million hit from the defense side of the cleanup in the full committee the other day. I have yet to hear any criticism of that hit from DOE, the additional $28 million. Could you explain?

Now, here again, in one of the press releases I did see, 18,000 people would have to be released. I thought it was because we had the rescission, but in your presentation today, you were going to do it anyway. We were led to believe and the American people were by that press release that those 18,000 people had to go because we reduced it $145 million.

Mr. GRUMBLY. Let me try to explain it.

Mr. MYERS. Okay.

Mr. GRUMBLY. As you know, you appropriate money to us in three accounts, the defense account, which has been about $5 billion, the nondefense account, about $750 million, then a uranium decontamination and decommissioning account. The $128 million worth of cuts in the defense account, coming at the time that they do in the fiscal year, amounts to about a 5 percent reduction, and

I would be happy to tell you where we would take that if we had to.

Mr. MYERS. There has been some discussion about that, too. But you were going to cut, some of it is already obligated, as I understand, but go ahead.

PROPOSED RESCISSION IN NONDEFENSE ACCOUNT

Mr. GRUMBLY. Yes. The $45 million reduction comes out of an account that is much smaller, first of all, $750 million to begin with. You put rightfully, I think, a prohibition on taking the money out of places where we are actually doing cleanup. So effectively, where we were actually doing cleanup on that account was about $175 million, so if you do the subtraction roughly we were left with about a $500 million account. We have about $250 million that is still unobligated in that account at a third of the way through the fiscal year, so if you take the $45 million.

Mr. MYERS. A third of the way?

Mr. GRUMBLY. Through the month of January, that was—excuse me. October, November, December, January, through the end of January.

Mr. MYERS. Okay, I understand.

IMPACT OF PROPOSED RESCISSIONS

Mr. GRUMBLY. So if you assume that the rescission would take place at about the midpoint of the fiscal year, fundamentally you would be talking about taking $45 million out of about $250 million that was left or about a 17 percent reduction in the actual account. The reason why we felt it was necessary to essentially put the Congress on notice is that that account is an account that pays for a lot of the smaller cleanups all around the United States, and it also pays for decontaminating the Fast Flux Test Facility at Hanford as well as for dealing with the West Valley nuclear plant in New York.

So what happened is if you take a 17 percent cut during the middle of the fiscal year, we essentially don't have much alternative, but to affect a wide variety of sites that have a problem. In the defense account we are fundamentally dealing with the eight or so major facilities as well as a lot of the management costs that we have. So the reason why the alarm went off for the $45 million was to make sure that people understood that this was a reduction that would, in fact, have a substantial impact on the account at a point in the year when it affects a whole lot of different and smaller sites. It is not going to affect everyone.

I mean it depends where things are and if it goes through, I think the major impact would be about a 17 percent cut on some projects. There would be some places that would have no cut at all because of the responsible action that you all took to say that you didn't want to impact the actual cleanup, and we interpret cleanup as where we are actually taking remedial action this year. We are turning earth. So that is why you got the response.

Inside the big defense account when you take $128 million, you are basically affecting the following: You are affecting a lot of the analytical capability that we have, and there is some, I think, legitimate debate about whether the Department has used too many support service contractors, so, frankly, I am going to utilize the opportunity and so is the Secretary, to reduce our support service contractors with that kind of a reduction.

It also means we will be deferring some long-term maintenance on some of our facilities. But I can't really tell you, it wouldn't be responsible to say that those are things that we somehow couldn't make up down the line. They are also going to affect several things that I would classify as important activities, but they are things that are a little farther away from the center of our program than some things.

For example, we have gotten into an economic conversion activity at the Rocky Flats plant in Denver, and if we have to take that, we will cut that back. We are involved in—we fund a fair number of——

Mr. MYERS. Congressman Skaggs voted for it.

Mr. GRUMBLY. That is true.

Mr. MYERS. I tried to tell him. I defended you.

Mr. GRUMBLY. Well, I know.

Mr. MYERS. I am not a very good lawyer.

Mr. GRUMBLY. It is obviously very difficult to say that some of these things, particularly the last $28 million and the way it happened—I am here as much as anybody to say that I think AIDS research is an extraordinarily important priority that we need to have. All of these things have impact, but it was where you took the $45 million reduction, the time of the year, the size of the account, the number of cleanups and facilities that essentially got us to push the alarm button.

WORKFORCE REDUCTION

With respect to the workforce reduction of 18,000, I am sorry, I don't really think the press release was misleading about that, but I will take your word for it. I mean, we have been on record as saying that we are already taking major reductions in order to meet the efficiency gains that we have to meet in order to deal with these problems. If our press release seemed to indicate that this $151 million punched that 18,000 button, then I apologize for that.

Mr. MYERS. I think the Secretary yesterday said there were going to be 12,000 that were going to be released anyway, then the other six.

Mr. GRUMBLY. I think the way it plays out, and I am sure the Secretary probably misunderstood the question, is that there will be 6,000 jobs reduced during 1995, during the year that we are in. The remainder of the nearly 12,000 should be off by the end of the first quarter of fiscal year 1996. So it is approximately an 18,000 reduction altogether or roughly a third of the entire contractor work force that works on environmental problems for the Department.

Mr. MYERS. So if I understand what you are saying then, if we should do this again sometime, we ought to leave a little bit more money in the—take less than $45 million and——

Mr. GRUMBLY. I don't think you ought to take any out of the nondefense account, and let me just be clear about what further reductions in the defense account will be at this point in the fiscal year for 1995. We are right at the point, and I congratulate you and the staff for being where you are at the moment, where if we have to take further reductions, we are going to start getting first into the science programs in the Department—the technology development programs. We have basically, at this point, exhausted the kind of, what I would say, reductions that can be made without getting into the central core of the program. As long as I am required, as I am at the moment, to deal with all of these compliance agreements that we have around the United States, by law, by statute, by regulation, I am required to do that. If we have to take further rescissions in 1995, they are going to start coming out of the technology development budget, and we can debate whether that is a good or a bad thing, but I think that is where the next reduction would have to come.

Mr. MYERS. I have some later questions about the compliance and some of the what appears to be duplication that other programs within the Department of Energy are doing similar if not identical work. I have used my five minutes. Thank you.

Mr. Bevill.

USE OF CORPS OF ENGINEERS

Mr. BEVILL. Thank you, Mr. Chairman. We are pleased to have you with us, Mr. Grumbly. I think your agency is one of the few that is using the Corps of Engineers in some of your work. What kind of results are you getting from the use of those people?

Mr. GRUMBLY. I think when we use the Corps, we get very good work, but we don't get it yet all around the country at the kind of price that is always competitive with the private sector. So as I indicated to you last year when I was here, we are trying to find places where we can essentially have the Corps and some of the private contractors that we will deal with actually compete for the same contracts.

I think it will make the Corps healthier and I think it makes our private contractors healthier as well. When we use the Corps, and we particularly use the Corps at Hanford, I think we have been quite pleased with the actual results that we have gotten and somewhat less pleased with the price of the results sometimes.

Mr. BEVILL. Well, it would seem that it would be a practical thing to do. After all, they are already on the payroll. You don't have to pay any personnel. They use contractors themselves, they make the contracts, all you have to do is hand them the blueprint. They are the best builders in the world. Everybody seems to want to have their own little kingdom. But you are an exception.

Mr. GRUMBLY. We are trying to use them as much as we can.

Mr. BEVILL. You are using them some, but it amazes me that you have the best builders in the government already on the payroll being paid. They handle contracts all over the country, as a matter of fact, in many parts of the world, but when you say private contractors, they use private contractors, you know.

Mr. GRUMBLY. You know, we ran a competition at Hanford for the Environmental Restoration Program. When I got here there was already a plan that was on the table that we were going to separate from the main contractor, the construction work that we were doing, frankly, because we weren't all that happy with the main contractor's performance. But before we kind of went forward, we said, in part because of your urging, look, we said we would compete this.

The Corps came in with a very fine proposal, but they couldn't beat the corporation's proposal that was on the table, and it seemed to me as the best steward of the public's money that I needed to go with the lowest cost venture in that case. I told them, the leadership in the Corps at that time, that I would be delighted to continue to work with them so that we get the kind of overhead prices that we need.

I am also happy to say that the contractor that we picked, the Bechtel Corporation, has been the highest performer in our system over the last year in terms of its quality. But, Mr. Bevill, I agree with you. We need to use the Corps wherever we can. We just need to make sure that we are using them at the right price for the taxpayer.

POTENTIAL BUDGET REDUCTIONS

Mr. BEVILL. Your statement indicates that the Department intends to reduce the program budget request for environmental management by some $4.4 billion in the next four years. The bulk of these reductions, however, do not occur until 1997. This effort to cut the budget undoubtedly involves numerous efforts at many locations.

What would be the impact of an immediate reduction in 1996 of $1 billion? Address the issue of the impacts of accelerating those proposed cuts to 1996. Why are you waiting until 1997 to make them effective?

Mr. GRUMBLY. Well, first of all, let me say I take the responsibilities that I have for protecting all these nuclear materials very seriously. I get a lot of phone calls after 10:00 at night where either we have—somebody has been killed at one of our facilities, where there have been problems involving the radiation issues that I have to deal with. So, in thinking through how fast we could take down a system that is, frankly, pretty inflexible—I mean, we are dealing with a system that grew up over 50 years—we fundamentally had to come to a decision about how fast we could make these reductions in a way that would still guarantee the safety of the complex.

IMPACT OF POTENTIAL BUDGET REDUCTIONS

For example, I am concerned that even with the reductions that we have, for example, at a place like Rocky Flats, where we are going to be taking down roughly 1,700 folks over the next several months, that we make sure that we are able to continue to be able to do the work that we need to have there at this point. So, I am concerned that too fast a reduction would get us down essentially to where—I think the President's 1998 budget would get to that billion-dollar number that you are talking about—I would have a very difficult time dealing with the safety profile.

Secondly, it would put me wildly, wildly out of compliance with the environmental laws of the land unless you all change them during the next several months. Since a lot of our strategy for reforming the program depends upon being able to renegotiate our agreements with the States, if I get into a position of saying, "You have to renegotiate with us because we have even a billion dollars less than we thought we were going to have at the moment", I think the likely response from the States will be to sue us. They will win, according to my lawyers, and we will end up with a system that is being controlled by Federal judges around the country.

I think that would be absolutely the worst outcome that we could possibly have. It would freeze things in place, we would get no progress or we would get very little progress, and we would be in the kind of situation that school systems have been in around the country when Federal judges were telling people, telling professionals how to do their business. I don't think that is how we ought to deal with the safety responsibilities and the legal responsibilities we have.

I think we need to, collectively as a government, we need to purchase the time that is necessary to make the kind of rational changes not only in the agreements, but in some of the statutes that underlie these agreements so that we can continue to be in compliance with the laws, whatever they are. I think that is the fundamental reason not to drain the money out of this program too fast.

Mr. BEVILL. But I am not being critical when I asked you that question about the impact. You know here in the Congress we have a habit of cutting taxes, and then cutting the expenses in later years. You know the much publicized amendment, constitutional amendment, budget control amendment goes into effect in 2002 when and if it passes. So I ought to reverse the question a little bit and ask you, are you saying if you follow the budget, by 1998 you could do a much better job of cleaning up.

POTENTIAL CHANGES

Mr. GRUMBLY. I think if we can—it will be a stretch. I need to be absolutely candid with you about this. As I said, you know, we have projected large productivity increases based in part on getting off the payrolls a lot of the people who were very suitable for working during the Cold War and had the right kind of skills for then, but who really don't have the right kind of skills that we need to have today. We can dramatically increase our productivity, we can recompete our contracts. All of that will be done. We can have the right incentives so that we pay our contractors for saving the taxpayers money, rather than spending the taxpayers money.

Right now, these big contracts that we have by and large reward the contractor for spending more money. We need to change that, and we are in the process of doing that. Secretary Schlesinger, former Secretary Schlesinger, was at a meeting I was at, when I laid out this program. His major concern was "what makes you think you can get that efficient?"

Norm Augustine, admittedly, he is president of a major contractor that we have, but also a former Deputy Secretary of Defense, a skillful person, had the same reaction. You are going to have a tough time making these goals. I think we can do it because I believe firmly in economic man. I believe if we give people the right incentives, the right goals, that they will do fundamentally the right thing.

I also think that we can deal with the compliance agreement problem in a rational way. You all are in the process of delivering much more responsibility to States now than they have ever had. I think if we continue to work with them, that by and large, they will come around to the kind of risk-based system that we need to have as long as we don't ask them to do things to get them too far away from the statutory base that they have to deal with.

I think the worst outcome would be, during a period of time when we are saying to the States we want to give you more power, to then remove from them the ability to deal with the major responsibility that the Federal government has essentially delegated to them, which is cleaning up these Federal facility sites. So I think the combination of making major efficiency changes with major effectiveness changes, the regulatory refund can be done. We can take this budget down, we can make the kinds of projected savings, we will have a better program at the end of it. Indeed, if we can do all of this, we will have one of the most efficient operating programs that this government has. I mean, we are not just a check writing program.

Mr. BEVILL. Let me ask you another question. You may want to extend on that in the record. What kind of reductions in overall employment are we talking about?

I am going to skip that one and put that in the record for the answer.

[The information follows:]

REDUCTIONS IN OVERALL EM EMPLOYMENT

The Office of Environmental Management is in the process of reducing its' work force by over 17,500 contractor employees. This reduction began in FY 1994 and will be completed in FY 1996. A table showing target contractor employment reductions is attached. The Department estimates that these reductions, along with productivity improvements, procurement reform and the use of prior year uncosted balances will save the Department $2.1 billion for FY 1994–FY 1996.

Contractor reductions are structured to maximize savings and mitigate long-term impacts. However, deeper budget cuts may require additional contractor employee reductions which would have significant impacts on core programs and compliance with regulatory requirements and schedules.

Environmental Management Contract Employee Target Reductions

EM is improving efficiency by reducing the number of contractor employees by a total of 17,508 (34%*) from FY 1994 to FY 1996.

Sites (% of FY 1996 EM Budget)	FY95	FY96 (Projected)	Total Reduction	As % of FY94 Site Employment Total
Richland, WA (19.6%)	2,500	2,000	4,500	26%
Savannah River, SC (18.4%)	0	4,200	4,200	22%
Rocky Flats, CO (8.7%)	700	1,700	2,400	35%
Idaho (6.6%)	1,250	1,000	2,250	30%
Fernald, OH (3.5%)	400	200	600	25%
Mound, OH (1.5%)	200	100	300	22%
Oak Ridge, TN (11.3%)	1,400	635	2,035	12%
Pinellas, FL (0.7%)	0	350	350	34%
Los Alamos National Lab, NM (1.9%)	0	194	194	2%
Lawrence Livermore National Lab, CA (1.1%)	0	100	100	1%
Argonne National Lab-East, IL (0.3%)	0	50	50	1%
Ames, IA (0.01%)	0	40	40	7%
Sandia National Laboratories, NM (0.6%)	0	32	32	<1%
Pantex, TX (0.3%)	0	10	10	<1%
Ashtabula, OH	0	60	60	–%
Grand Junction, CO	0	180	180	–%
UMTRA Sites, various	0	207	207	–%
TOTAL EM CONTRACTOR REDUCTIONS	6,450	11,058	17,508	

EM lead sites are in bold type

* This reduction includes an adjustment to account for contractor employees previously employed in Defense Programs and transferred to Environmental Management. EM reductions against an adjusted FY 1994 base of approximately 52,000 contractors.

CONSENSUS ON STANDARDS FOR REMEDIATION

Mr. BEVILL. Your statement that there is no consensus on standards for remediation at clean-up sites, can you update us on the efforts to achieve such a consensus? In other words, how do you get the consensus? You are waiting on the consensus. Where do you get it and how do you get it?

Mr. GRUMBLY. Of course, you all will create a lot of the consensus. I think if you will pass Superfund reform this year, that will fundamentally tell us that we only have to clean up to particular land uses, whether they be industrial land use or residential. It gives us that ability. It gives the EPA and us the ability to do that; you will give us the major tool that we need in order to make the right choices.

I would urge you very strongly to do that. We got close last year, and, of course, we got down to the end of the session and things got sticky. But I think this year we really need to make the kinds of changes in Superfund that we have proposed. That would be the single biggest, I think, change that we could make.

The second thing I think is we have got to continue to work with our colleagues in the EPA to produce what I would call *de minimis* standards for residual radioactivity. This has been a tough problem for EPA to come up with, you know, what is—it is essentially the "how clean is clean" question and we need to continue to work with them on doing that.

Mr. BEVILL. That is good. My question was about the consensus. How do you get the consensus? You say you get some of it from us. Where do you get the rest of it?

Mr. GRUMBLY. I think the rest of it—this will sound corny, but I think the rest of it comes from the people, in the following sense: We are making a determined effort to bring in to the decision-making processes at our sites the citizens and regulators and local government officials who live around our major sites and who have been involved with our problems. I think if we work together, between ourselves and the people who live around the sites, that we actually have a chance to get a consensus.

Mr. BEVILL. I understand my time is up. You may want to extend your remarks on that. I do have, Mr. Chairman, some questions that our colleague, Representative David Skaggs, would like to have in the record for Mr. Grumbly to answer.

Mr. MYERS. Does he want to reconsider his vote?

Mr. BEVILL. I don't know. And also I have several of my questions that I ask be put in the record.

Mr. MYERS. We are going to go back again, Tom.

Mr. Frelinghuysen.

INTERAGENCY COOPERATION

Mr. FRELINGHUYSEN. Thank you, Mr. Chairman. I have some general questions and then a few specific questions. Good afternoon. You are the first person from the Department that sort of mentioned that they work with other departments, most particularly the EPA. Is that done on a regular continuous basis and what other Departments do you work with in that same manner?

Mr. GRUMBLY. Yes, sir. Other Federal departments?

Mr. FRELINGHUYSEN. Yes.

Mr. GRUMBLY. EPA is the agency that I deal with the most. We also deal, because we have major labor issues, we deal with the Department of Labor. We deal with the Defense Nuclear Facilities Safety Board, which has substantial oversight responsibilities for us. I would say on a routine basis those are probably the agencies that I deal with the most other than the Office of Management and Budget.

REVERSE DUTCH AUCTION

Mr. FRELINGHUYSEN. In previous testimony, and I am sure your Department monitored this before this subcommittee, groups have suggested that a way to get the cleanups completed in a cost-efficient manner would be to implement on a trial basis a reverse Dutch auction.

In other words, the Federal Government would pay a set amount to an outside entity to clean up a particular site, and if they complete it for less money, they would get to keep the difference. Have you done an analysis of this theory and what are your general views on that idea?

Mr. GRUMBLY. I haven't done a detailed analysis of it, but now that you have asked directly, I will try to set one in motion. My sense is that at this point in time the level of uncertainty about what people would bid is so high that we would be unable really to hold that kind of an auction because the level of technology, the level of contamination, what can actually be done is at an extraordinarily uncertain place at the moment.

I mean, you hear estimates, and we will be publishing an estimate of our own at the end of this month about what it would actually cost to clean up; that is, you know, at the low end is approximately $200 billion and at the high end is several times that. So I would be very surprised if when push comes to shove and we actually got the private sector involved that we would be able to find a price that people would reasonably be willing to do the job at, but I think that we should investigate it.

Mr. FRELINGHUYSEN. I don't think they were suggesting that the whole system be run like this. I think there was a general encouragement that we take a look at this as one way of conducting business.

PRIVATIZATION

Mr. GRUMBLY. Let me suggest a modification, which is in some ways more straightforward, I think. That is, as you may know, this system has fundamentally been run in the past by large management and operating contractors, which is to say it is run by the private sector now, but it is run by them on "cost-plus" contracts, a lot of the time.

Where we are moving very aggressively is toward privatizing a lot of the work that we do at our sites, bidding out specific projects that in the past would have been done by these large contractors, with the overhead and indirect rates that they have, to what I would call the broader private sector.

We have a fair amount of evidence that we can do a lot of the work at up to 50 percent off what a lot of our big contractors have historically been charging us for that, and I think we ought to pursue that way of doing business absolutely as vigorously as we possibly can.

Mr. FRELINGHUYSEN. You are suggesting that is greater privatization?

Mr. GRUMBLY. Oh, absolutely, it is much greater privatization than what we currently have. One of the big criticisms of the system is that three or four major contractors is an oligopolistic arrangement. We really need to broaden the number of people who work in our system.

HIRING PEOPLE WITH THE APPROPRIATE SKILLS

Mr. FRELINGHUYSEN. What do you then refer to on page 8 of your statement about the hiring of experienced Federal project managers and you talk here about changing the way we do business, and I quote, "We have hired 1,200 experienced project managers, cost estimators, safety and health professionals, environmental engineers." Are these Federal employees or what are these people?

Mr. GRUMBLY. They are Feds. Here is the situation. Up until two years ago, I was responsible for nearly a third—when I came on, I found myself responsible for nearly a third of the Department's resources, and had about fewer than 10 percent of the Department's employees to actually oversee that.

For the last 20 years, the General Accounting Office, the Office of Management and Budget, every single oversight organization that has looked at the DOE has said that the tail wags the dog in the DOE—that the contractors run the DOE.

What we have done in a very selective way is to bring on board people who have the appropriate skills to negotiate with our contractors about what the right costs of projects ought to be, what the right project management costs ought to be, what the right health and safety framework ought to be so that we can have an adequate dialogue about what the costs are. I showed a chart——

Mr. FRELINGHUYSEN. Why do you need to—can't you have that—why do these have to be Federal employees? A number of States are looking—maybe they don't have the responsibilities you have, but a lot of State governments are in fact, looking toward putting people who have proper licenses and putting their licenses on the line in terms of taking these responsibilities.

Mr. GRUMBLY. I think we should look at that. I have no objection to looking at that.

Mr. FRELINGHUYSEN. Your comment here relates to——

Mr. GRUMBLY. The fundamental problem that we had in building a budget, for example, is we were at the mercy of folks who had only an economic incentive to price projects at the highest possible price, and we had not the capability, the professional capability to push back and to say: "Come on, you say that the project is going to cost $20 million. Out in the private sector where I came from, where I managed a firm and ran a firm that actually cleaned up hazardous waste sites, I know you can do it for half that amount." If you don't have some people who have that experience, you don't get the push effect.

Mr. FRELINGHUYSEN. But that determination can be made by somebody in the private sector surely.

NEW CONTRACT AT ROCKY FLATS

Mr. GRUMBLY. Yes, and for example, let me give you, the new contract we are about to sign at Rocky Flats, Colorado, to a great extent embraces the concept. What we have done is we have said okay, we need world class contractors to deal with each of the major problems we have there.

We have major cleanup problems. We have major nuclear material problems. We have waste disposal problems. Instead of letting one contractor basically do what it wants, we are also saying we need an integrated project management contractor who comes in that we pay exclusively on the basis of how well the projects get done. Do they get done on time, on schedule, on performance? We pay them for that. So that they actually have an incentive, the project management firm that we hire, has an incentive to make sure that the taxpayer gets the best deal that they can.

The major cost in our system, Congressman, is far and away the cost of the contracts. The cost of Federal employees is an important, but relatively minor cost of doing business, and I think along with—the General Accounting Office time and time again has said, look, your major problem is you are not in control of what you are doing. I am in favor of doing this the most efficient way that we possibly can, and I think we ought to look at whatever creative, out-of-the-box ideas people have.

Mr. FRELINGHUYSEN. Thank you. I have some additional questions later or do them right now?

Mr. MYERS. Go right ahead.

THORIUM SITE IN WAYNE, NEW JERSEY

Mr. FRELINGHUYSEN. Thank you, Mr. Chairman.

Relative to the Wayne, New Jersey, thorium site, are you familiar with that?

Mr. GRUMBLY. Yes, I guess I am.

Mr. FRELINGHUYSEN. I would like to ask some questions relative to that. Can you tell me what action has been taken and what actions you plan for the next few months, the general time frame for the removal of that thorium.

Mr. GRUMBLY. First of all, this is one of the sites that is going to be affected under that $45 million rescission from the nondefense accounts. It is going to suffer roughly, if it goes through, a 9 percent reduction. Not a 17 percent reduction, a 9 percent reduction in what we can do over this year because it is in that part of the budget that we were talking about recently, the nondefense part of the budget, so it is going to slow down our activities some.

We plan to let a contract to actually deal with, as I recall, the major part of the pile that is there within the next 30 days, and I expect that we are going to have significant on-the-ground action still this calendar year. Whether this budget reduction pushes it back into the first quarter of 1996, I am not sure, but it is definitely on the list to get major on-the-ground action this year.

Mr. FRELINGHUYSEN. You have received some bids on that, have you?

Mr. GRUMBLY. Yes, we have. I am not familiar exactly with the bids. My principal deputy has been dealing with it, but I know that we are close to making a decision.

Mr. FRELINGHUYSEN. All right. With the Chair's permission I would like to add a few more questions relative to that in the record.

Mr. MYERS. It is just you and me and thee.

Mr. FRELINGHUYSEN. Thank you for your responses. Thank you, Mr. Chairman.

Mr. MYERS. You are going to put those in the record?

Mr. FRELINGHUYSEN. Yes.

CRITICISMS OF ENVIRONMENTAL MANAGEMENT PROGRAM

Mr. MYERS. Mr. Secretary, there have been some oversight hearings that we have held earlier in the year, people away from the Department of Energy, I think you are aware of that, I think some were monitored. Several were very critical of the lack of progress from the environmental management. Ms. Wilson is quite complimentary, so she should have written the report. We realize it is a difficult job, but some of the specifics, 40 percent administrative costs? Could you explain that.

Mr. GRUMBLY. Well, it depends. First of all, I would like to give you a detailed breakdown for the record in terms of where we think the costs are.

[The information follows:]

AVERAGE ADMINISTRATION COSTS FOR SUPPORT SERVICE CONTRACTS F0R ENVIRONMENTAL CLEANUP WORK

In a detailed study performed for the Department in November 1993, the average administration costs -- or project management costs -- for environmental restoration and waste management projects were estimated to total approximately 23% of total project costs. Such project management costs were defined in the study as the management costs charged to a project by the Department's management and operating contractors and on site architectural and engineering contractors, and included costs for supervision and inspection, salaries and wages, non-construction supplies, and training.

The Department currently is working with its contractors to review project management costs and identify areas where these cost should be reduced. We are reviewing our contracts to ensure that:

- Project support/overhead, such as directly assigned staff, information management, maintenance, engineering, security, G&A, utilities, etc., are evaluated to benchmark existing practices and performance standards, and to identify areas where productivity/efficiency gains and cost savings may be achieved.

- Project support/overhead best practices and performance standards from DOE, other Governmental agencies, and industry are reviewed for applicability and implemented where appropriate.

- Cost effective approaches to providing services (such as user pay versus funds allocation, make versus buy, value engineering, lease versus purchase, etc.) are appropriately implemented, and unnecessary and redundant activities and services are eliminated.

- Contracts have productivity/efficiency performance measures with quantitative performance standards and positive and negative incentives for contractors.

- In the event of unsatisfactory contractor performance, contracting alternatives, which could include the use of other Governmental agencies, are established so that EM can acquire the most cost effective services.

- Prime contractors clearly establish technical objectives, cost and schedule objectives, and accountability that extend down through all subcontract tiers.

- Contracts undergo periodic reviews to ensure that the performance measures and criteria are consistent with current best practices.

STUDIES VERSUS CLEANUP

Mr. MYERS. That would be fine.

Mr. GRUMBLY. I will tell you the bad news first and then the good news. The bad news in all of the environmental remediation, not just the Department of Energy, but in all of environmental remediation is that too much money gets spent on the study side of this business before we actually get into cleanup. I don't want to sound like "Johnny one note", but that is another reason why you ought to pass Superfund reform this year because it would really change that a lot.

For example, a project was just completed out in Missouri—private sector project, not even a national priority list project, which is to say not subject to a lot of the EPA regulations. It was done by my old company, a company called Clean Sites. It was a $25 million project, only about $12 million of it actually got spent for on-the-ground remediation. The rest of it is in studies, in transaction costs, a variety of things. It is unacceptable and we need to change that.

Mr. MYERS. Pardon me for interrupting. If you have companies like your own company that know what they are doing, why do we need studies?

Mr. GRUMBLY. Because you have to characterize sites. I mean the big cost, one of the big costs in the DOE system, the first five years of this program has been to start from ground zero to ask the question "what do we have?" I mean, you would be—maybe you wouldn't be amazed, having been in the Congress since the time I was 17.

Mr. MYERS. Et tu, Brutus?

Mr. GRUMBLY. No, I meant that as a compliment.

Mr. MYERS. I thought the campaign was over. I heard that all last year, but—I am sorry, the Chairman wasn't here to help share with that.

Mr. GRUMBLY. I was running the elevators in the Longworth building when you were first elected.

Mr. MYERS. Just getting off the elevator.

Mr. GRUMBLY. Right. The costs of doing all this are really much higher than they ought to be all around the United States, and we really need to change the Superfund law to do that.

Mr. MYERS. How would that affect DOE?

Mr. GRUMBLY. It would affect us dramatically in the sense that it would enable us to sign up for agreements, for example, in which we would not have to do as many studies as we currently do. We would be able to sign up for agreements that were focused on outcome rather than process.

I think that what the EPA and our State colleagues ought to do is they ought to hold us accountable for the end, for actually doing things. They shouldn't try to tell us every step of the way how to get there.

Mr. MYERS. The Galvin report talked about that.

SITE CHARACTERIZATION

Mr. GRUMBLY. I do think it is a problem with respect to why it has taken so long. We started from ground zero five years ago. We have to reasonably characterize what is at these sites so that when we send our workers, for example, into actually taking some of these buildings down and cleaning some of these things up, we don't subject them to greater risks in what we do as we send them in.

We don't have as-built drawings for most of the buildings in this complex. We have 20,000 buildings in this complex. They accrued over time. When our guys go in to start knocking them down and start to do remediation, I don't have "as-builts", so we have to be very careful, very careful when we go in there before we do business. So we have to have adequate characterization.

I don't think we need to have characterization designed to withstand lawsuits, however. One of the problems that you have had over the last 15 years of environmental remediation is people have been forced to collect information way past what I would call the cost-effective level because they do it in order to withstand lawsuits. I think we are actually in a pretty good position at the moment.

I mean, five years into this program—and again I refer you to my oral testimony—we are much farther down the pike than the EPA was at the same point in time, which is, I realize, damning with faint praise and is also a good reason not to transfer us to the EPA.

Mr. MYERS. It wouldn't be too difficult to beat them at anything.

Mr. GRUMBLY. You know, people are talking about how you are going to demolish the DOE, you are going to send us to the EPA. I would urge you not to do that.

Mr. MYERS. You are anticipating here. That is one of my questions. You are doing a good job of it. You don't need questions, you have got the answers.

Mr. GRUMBLY. We will play "Karnack" for the next hour. So I think we have to be reasonably careful. We are finally getting to the point where we are doing more remediation than we are doing study. The main issue that is going to confront us in the future is whether we are going to do this remediation in a reasonable way on projects that really are ones where there is significant risk. That is really the main issue.

I mean, people keep beating on us for not doing enough. Well, you know, sometimes the Lord gives you what you want, and one of the problems with this program is we can do a lot, but if you get us to do it on projects where the technology is so crude that the unit cost of cleanup is gigantic, you won't get the kind of return for the dollar that you need. So we need to be careful about what projects we actually, in fact, turn the earth on.

PRIORITIZATION

Mr. MYERS. Well, several of the oversight witnesses we have had have been critical of your selection of the priorities. As an example, you mentioned about the potential problems of plutonium.

I have been on this committee more years than most people would like to see us. Mr. Bevill came on a couple years ago. We traded chairs. He gave me the gavel, but no money, so I took his chair. But anyway some of the criticisms have been in priorities that you have been chasing programs that really don't need to be chased right now, but sometime down the road when we have the money, can afford it. Plutonium is an example.

We have had witnesses that testified that there really is no threat to plutonium if it is handled properly, except if it gets in the wrong hands. It is a potential for a weapon, but as far as physical harm to an individual, we have had witnesses sit right there and say they know people who have ingested plutonium and are still alive.

Mr. GRUMBLY. First——

Mr. MYERS. I am not a scientist, so I don't know. I guess I wouldn't know plutonium if you had a pocket full of it over there.

SAFETY OF PLUTONIUM

Mr. GRUMBLY. First of all, I just can't overemphasize how much I think the safety of the plutonium is the largest risk in our system at the moment. We have solved one other major risk that we can talk about, the explosive risks of the high-level radioactive tanks at Hanford.

Plutonium, if it is not handled properly, will catch on fire. If it catches on fire, aside from burning quite actively, the radioactive dose that the workers will get from it will be lethal. The Defense Nuclear Safety Board, comprised of some of the more knowledgeable people in the country, our own Environment, Safety, and Health folks, frankly all the experts I deal with at Los Alamos and other places tell me, and I believe them, that plutonium is one of the highest risks that we have in the system. It is particularly high because it is 14 miles from the seventh largest metropolitan area in the United States.

We kidded about Mr. Skaggs a few minutes ago, but Mr. Skaggs and the members there have a very legitimate concern that we have the resources to deal with this risk 14 miles from several million people, and that is a major concern that I have. I frankly did not see the testimony from any experts that we shouldn't be treating plutonium as a major risk.

I think when you get down into some of the groundwater cleanups in that area, I think there is at least an argument. But with respect to Dr. Teller, with great respect, I mean, Dr. Teller also is somebody who said that we ought to basically use nuclear explosions to do earth moving for us.

I mean, he is a wonderful scientist, but I really don't think that his qualifications in the area of environmental remediation are ones that I would want to rely upon. I don't think most of his colleagues would, either. But put the nuclear stuff aside. I did read his comments with respect to some of the other things that we have to deal with, and I think there is a legitimate argument about how much needs to be done and where it needs to be done. But I need to emphasize to you, we are being asked by the regulatory agencies to really do nothing more than what our society is asking DuPont, Monsanto, every Fortune 500 company in the country to do.

STATE INVOLVEMENT IN PRIORITIZATION

So to the extent that you have delegated powers to the States through the laws that we have passed, that fundamentally enables each State to work with us directly to set our priorities at each site.

Now, I think that we can inform that dialogue better than we have in the past about what we think is important, but fundamentally we can't set our priorities independently of the State regulatory agencies with whom we work. I think that we are working very closely with them now. We are engaging them in some very serious discussions all around the country to see if we can't bring our priorities closer together. But if you look at our system and people say "well, they are not prioritized", fundamentally we are prioritized.

We are prioritized by the wishes of each of the State and Federal regulators in the regions where we do business, and if we are going to press back and maybe we need to do that, we need to recognize that it takes two or three sides to tango.

You can't do some kind of top-down exercise where we say: "Hey, we have the right answer", and then impose it on the system, unless we dramatically change the statutory framework within which you have asked me to do work. I suppose we could have some arguments about whether—and in fact, I think we know that there are some of the rules for nuclear safety at some of our laboratories, for example, that maybe we can go to a more what I would call graded approach that we don't need to do the full 100 percent of every single rule that we have out there, so maybe we can pull back some there. But by and large, I would say this unless you have the responsibility as I do. I have the responsibility; the President has given it to me—you all have to keep these places safe. Unless you have that responsibility, I don't think people ought to speak too lightly about some of these risk issues.

Mr. MYERS. Well, you see, we are getting contradictory evidence and testimony here. That is what makes it very difficult. It has been historic with this committee. We have been led down the path so often, the SSC, the Superconducting Super Collider, the enrichment process, we have gone down two paths on that.

SAFETY OF PLUTONIUM AND ROCKY FLATS

Mr. GRUMBLY. I understand. The plutonium, if I could leave you with anything——

Mr. MYERS. We are gun shy.

Mr. GRUMBLY. Plutonium—first of all, I need to take you to Rocky Flats, when we are all through and done this year.

Mr. MYERS. I can't afford to get in and out of the airport out there. Have you seen what it costs out there? Isn't there someplace cheaper?

Mr. GRUMBLY. The baggage system there is probably pretty risky, too.

Mr. MYERS. To pay for that airport it is going to be $28 for each ticket. If you fly in there we are going to be into that one. We should, this committee should go visit more than we do but, my God, we are in session now five days a week until midnight. But anyway.

Mr. GRUMBLY. But when you get finished with the contract you will have more time.

Mr. MYERS. A good example here, how long have we been working trying to clean those buildings up, those air ducts?

Mr. GRUMBLY. Really only about three or four years. But that is a good example of what I was talking about.

Now, I don't know about you, but I don't want to crawl into one of those air ducts or start to take the brushes that need to get that stuff out unless and until I have a reasonably good idea what is in there and what configuration it is in. Because, while you may have heard some testimony that you can inhale plutonium and have it not be a problem, that is not the prevailing view in the scientific community, and I cannot put our people at risk.

Mr. MYERS. We are not suggesting you should.

Mr. GRUMBLY. But the flip side of that is, of course, we ought to go faster in dealing with some of these problems. I have only had responsibility for Rocky Flats for about a year at this point as it has transitioned over. One of the big problems we continue to have is that some of our people still believe that the United States is going to go back into making weapons at these sites, and so we still have a cultural problem with some of our folks at these sites, persuading them that the main mission they have is really the cleanup mission. I think it absolutely is.

Mr. MYERS. If we should do that, it sure won't be in Rocky Flats.

Mr. GRUMBLY. No, it can't be. That is absolutely right.

Mr. MYERS. I realize we can't back a dump truck up there and scoop shovels and go clean up Rocky Flats and haul it out to the town dump. I realize that, but three years there and we still don't know what we got there, something is wrong.

PROGRESS AT ROCKY FLATS

Mr. GRUMBLY. I think we know what we have there. We are on the verge of bringing in a new contractor who will be in place on the first of June. I think we have a better management team there. I think we are improving the regulatory relationships so they will let us do some things. I think you will see major progress between now and next year. If I am still doing this job next year at this time, I think we ought to——

Mr. MYERS. You have another two years, don't you?

Mr. GRUMBLY. If I am still doing this job next year at this time, we ought to review the Rocky Flats situation.

WATER SUPPLY AT ROCKY FLATS

Mr. MYERS. There is a question about the water supply there. What is the status of the water supply?

Mr. GRUMBLY. I believe that in fiscal year 1995, by the end of this current fiscal year, we will have dealt finally with all of the problems with the water supply situation in the area. I don't believe we have any major dollars in the 1996 budget for it.

Mr. MYERS. You spoke about the West Valley, but what about Fernald?

FERNALD

Mr. GRUMBLY. Fernald—we potentially have an opportunity at Fernald. It is the smallest of our biggest places. I mean to give you a sense of its size, it is as big as the Ford River Rouge plant in Detroit, so when I say little, it is big, but it is something you can get your arms around.

The way we have approached this in the past is to try to be in compliance with everything to do everything around the country. If we should go to a situation, and, again, I would urge you to change the laws first before you change the budgets. However, if, for example, we could say, "Okay, we are going to muster our resources", and instead of just putting some here, some there, some every place around the system, if we are able to muster our resources, I could put together a plan that in seven years, for somewhat more money than we currently spend, would have that place ready to turn back to some kind of unrestricted use. Fernald is a place along with the Mound site for which I say it is feasible, I can get my arms around it, it is not like Hanford which is so big. We could make major progress at Fernald.

PINELLAS

Mr. MYERS. Is Pinellas somewhat similar? You just have to get it cleaned up so you can give it away?

Mr. GRUMBLY. We have actually sold Pinellas at the moment, but I still have some cleanup responsibilities to deal with there. I think we can get Pinellas off the list, in the next five years or so.

WASTE ISOLATION PILOT PLANT

Mr. MYERS. You have been saved by the bell. We have another vote. My last question, WIPP, we hear so many stories coming out. That is a place the committee has to go visit sometime, too. Are we still running tests there? How long do we have to test a site?

Mr. GRUMBLY. You all passed a law in 1992 that probably rightfully gave the responsibility for declaring the WIPP was safe to the Environmental Protection Agency. So we have had to work during the last couple of years to produce the application to the EPA to open WIPP. We think, and I think the Secretary addressed this yesterday, we think we are on time. It will be a stretch, but we think we are on time to still open that place by the end of 1998, and it is still worth doing.

I know it has been expensive. We spent a lot of money there so far. But when you take a look at the analysis of what WIPP is likely to cost once it is open versus what the costs of keeping all the waste around the country would be, you get a 400 percent benefit cost ratio. So it is worth it to continue to pursue it down to the opening and there is no higher priority.

I can say this because I have it tatooed on the back of my head from the Secretary. She has no higher priority than getting WIPP open.

Mr. MYERS. When?

Mr. GRUMBLY. By 1998.

Mr. MYERS. You are going to make the 1998 target?

Mr. GRUMBLY. I believe so. I think we have got a great opportunity working with the EPA. We will have the application, draft application, at least in part over to EPA on time, by the middle of April. I am sure there will be problems just because this project has been controversial, but it doesn't have the same kind of controversy as some of the other big projects that we all know about.

Mr. MYERS. We are still paying State and local governments, aren't we, for the privilege of bringing jobs to them?

Mr. GRUMBLY. I think we are reserving the money at the moment. I would like to get back to you explicitly on this.

Mr. MYERS. Is it in escrow?

Mr. GRUMBLY. Yes, there is money in escrow.

Mr. MYERS. I couldn't remember.

Mr. GRUMBLY. We did spend some money in the past.

Mr. MYERS. They don't get any money if we don't put the waste there?

Mr. GRUMBLY. Right, they don't get the money if we don't put the waste in.

Mr. MYERS. We aren't going to play a North Korea on them.

Well, Mr. Secretary, I think each of us has a series of questions that we would like to include in the record. We realize—Rod, do you have——

Mr. FRELINGHUYSEN. No more questions.

Mr. MYERS. You got off pretty easy. He is usually tougher than that.

CLOSING REMARKS

Mr. GRUMBLY. Well, let me say this, first of all, I appreciate very much your attention. I think one of the problems this program has is that I have a hard time attracting the interests of a lot of the Members on this because it is not in as many districts as some other programs, and I would really like to work with all of you.

You have a site, the Wayne site that is one of the smaller things by our standards, but we would really like to work with all of you to try to make sure that everybody in the House is as well educated about what the legacy of the Cold War is and what our responsibilities are, so you can make rational choices about funding this.

RESPONSE TO PROPOSED RESCISSIONS

Mr. MYERS. I said you hadn't complained to us. You did. I apologize. It went to Chairman Livingston. That is the reason why it hadn't registered that there was an objection.

Mr. GRUMBLY. We had to let people know that somebody was at home. I mean, of the $260 million in rescissions, I think this program has taken about $173 million. Fundamentally, I think we want to try to persuade you that we are doing the best for the public's purse that we can.

Mr. MYERS. I think we are committed to $173 million, but if you have a better recommendation as to where it comes from, I don't know whether it can be done or not, you might make a recommendation to us. In your letter you offer to make a suggestion. So the telephone is available, the mail service. We may not have that much time to get the mail to us, but at least give us a call.

Mr. GRUMBLY. Yes, sir.

Mr. MYERS. Several Members have additional questions. We appreciate your cooperation. As Ms. Wilson says, I think you are doing a good job, but we are concerned about that $7 billion that you are asking for this year. First, where it is going to come from.

Mr. GRUMBLY. $6.5 billion.

Mr. MYERS. You add up all the waste, the transfer and everything.

Mr. GRUMBLY. Right, I understand.

Mr. MYERS. That is a lot of money. We spent $23 billion in this area in the last five years, but cleanup there, I realize nothing can be accomplished overnight, but you are halfway home, so next year you will bring those charts back and you will have them all yellow all the way up.

COMPLETED CLEANUPS

Mr. GRUMBLY. I should give you something for your pocket if people attack you on why are you funding this program. I have a scroll that has 500 specific cleanups that we have done over the last three years.

Mr. MYERS. Completed?

Mr. GRUMBLY. Completed cleanups.

Mr. MYERS. In the last what?

Mr. GRUMBLY. In the last three years.

Mr. MYERS. Five hundred. We haven't got room in the record for them.

Mr. GRUMBLY. We have 10,000 projects to do, but we have completed 500 of them. Anybody who says this program isn't doing anything doesn't know what they are talking about.

Mr. MYERS. Why don't you put that in a press release instead of attacking us all the time?

Mr. GRUMBLY. Stop rescinding our money.

Mr. MYERS. You would be a lot more successful.

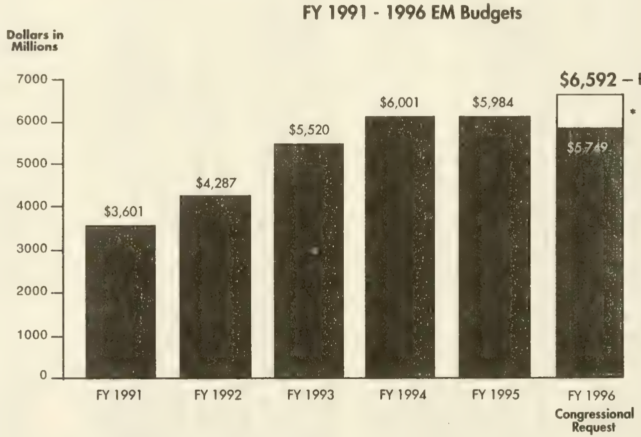
Mr. GRUMBLY. Point well taken.

Mr. MYERS. Well, thank you for your testimony. The committee stands adjourned until 10:00 tomorrow morning.

[The charts used by Mr. Grumbly, his prepared statement, and questions and answers for the record follow:]

Environmental Management FY 1991 - FY 1996 Budgets

The FY 1996 Environmental Management budget request is $6.592 billion.



% Change from previous year base program budget

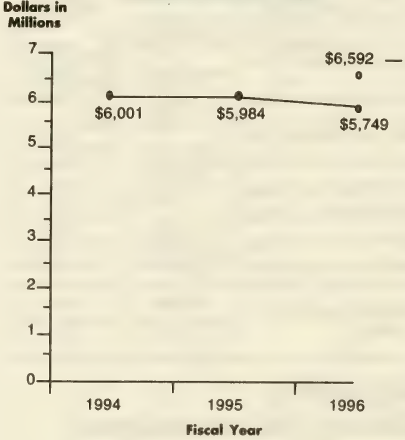
Fiscal Year	Percent Change (previous year)
1991	+ 58%
1992	+19%
1993	+29%
1994	+9.0%
1995	-0.3%
1996	-4.0%

* $843 million budget target transferred from other DOE sources in FY 1996 for new EM responsibilities. The base program budget requirement is $5.749 billion.

Trends in the EM Budget – New Missions for FY 1996 versus FY 1995

The FY 1996 EM request includes $843 million for the management of major additional responsibilities: (1) Savannah River Site, SC, includes the maintenance and landlord responsibility for six nuclear reactors and two process canyons; (2) Mound Site, OH; (3) Pinellas Site, FL; and (4) numerous high risk facilities at other sites.

EM Base Program Budgets



— **FY 1996 Environmental Management Budget Request**

$843 million for new work scope includes:

- **$685 M for managing former defense facilities at the Savannah River Site, SC**
- **$57 M at the Mound Plant in Ohio**
- **$49 M at the Pinellas Plant in Florida**
- **$52 M for additional high risk facilities at Brookhaven National Laboratory, NY, Argonne East, IL, Hanford, WA, Rocky Flats, CO, Los Alamos National Laboratory, NM, Idaho, ETEC, CA and Oak Ridge, TN**

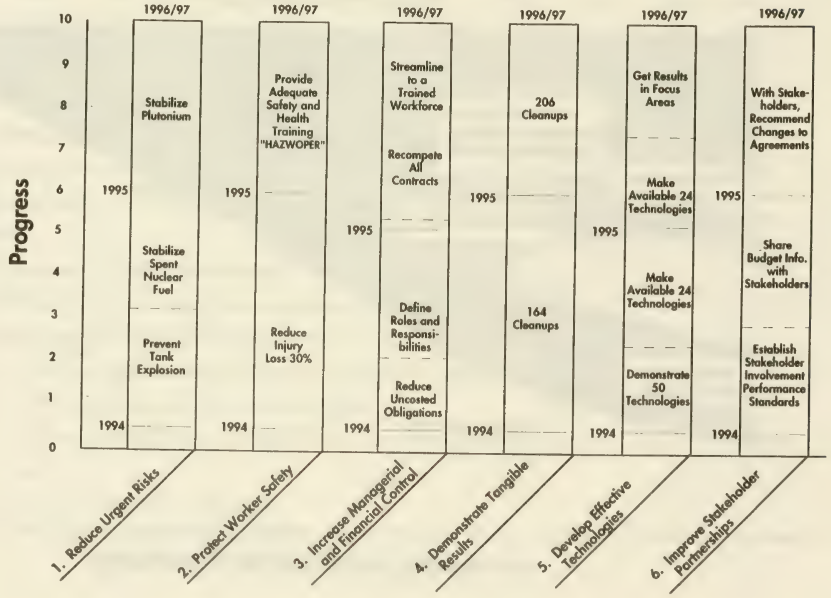
Environmental Management Strategic Goals and Commitments for 1994

Goal 1: Urgent Risks and Threats	Goal 2: Provide a Safe Workplace	Goal 3: Under Control Managerially and Financially	Goal 4: Be More Outcome Oriented	Goal 5: Technology Development Program	Goal 6: Strong Partnerships with Stakeholders
◑ Reduce urgent risks in: – Hanford Tanks – Spent Nuclear Fuel – Fissile Materials ◑ Identify all Urgent Risks and Threats at Existing Facilities ● Identify all Urgent Risks and Threats at Potential Surplus Facilities ● Issue the Complex-wide Spent Nuclear Fuel Strategic Plan	● Develop Worker Safety and Health Performance Measures ● Define Parameters to Characterize Safety and Health Performance ● Develop a Strategy for Sensitizing Workforce to Inherent Hazards ● Safety and Health Training Needs Assessment ● Develop Strategy for Enforcing Occupational Safety and Health Requirements	● Define Deputy Assistant Secretary Roles +● Complete Roles and Responsibilities Draft Report ● Issue Environmental Management Budget Procedures ● Reduce Uncosted Obligations $300 Million ● Increase Authorization of Staff by 1200 ● Change Management and Operating Contract Structure at Idaho ◑ Reduce Cost of HQ Support Service Contracts by 20 Percent ● Contract Reform Measures for Management and Operating Contracts △ Establish Working Group to Assess Management Control Systems ● Change Management and Operating Contract Structure at Fernald ● Expand Employee Incentive and Awards Activities ● Establish Survey System for Employee Job Satisfaction ◑ Expand Team Building and Rotational Assignments	◑ Implement Process to Transfer More Than 45 Percent of Hanford Site ● Draft Resource Document for Land Use Plans ● Initiate Four Pilot Projects with EPA +● Complete 29 Interim Remediation Accomplishments +● Complete 8 Remedial Action Projects ◑ Complete 80 Assessments ● Develop Facility Transfer Procedures ● Complete initial receipt of foreign fuel	● Implement New Technology Development Management Approach ◑ Technology Development Show Dollar for Dollar Leveraging ● Make Available for Transfer 24 Technologies to Private Sector	● Design and Implement Public Involvement Process ● DOE Annual Report ● Regular Stakeholder Communication Channels ● Establish Stakeholder Involvement Performance Standards ● Policy for Sharing Budget Information With Stakeholders △ Summit Meeting ◑ Informal Congressional Forum Process

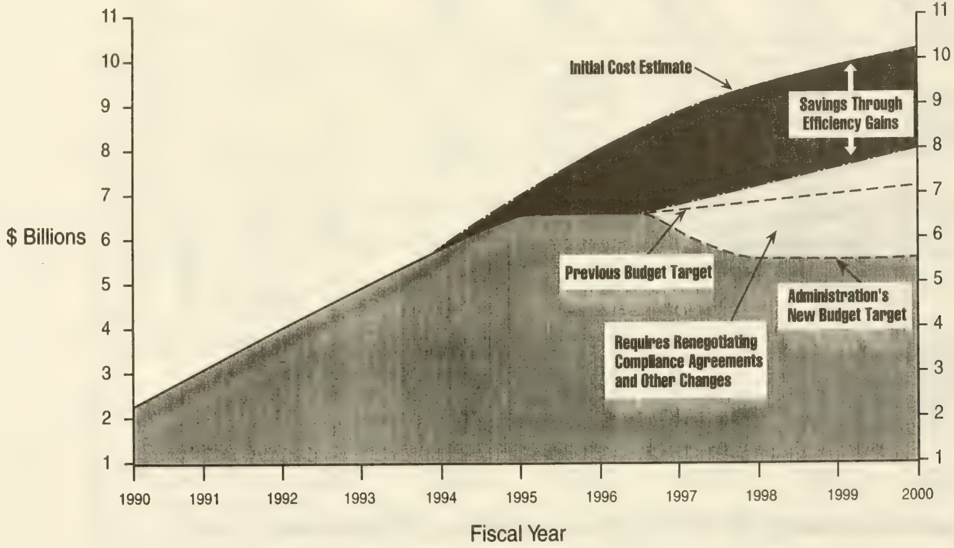
Summary

●	30	Met or exceeded expectations (75%)
◑	8	Partially completed (20%)
△	2	Goals altered (5%)

Measuring Progress and Keeping Commitments



Reinventing Environmental Management



What Have We Done?

Environmental Management Accomplishments

- Cleanup of 16 former nuclear weapons and industrial sites (FUSRAP).
- Cleanup of 14 Uranium Mills Tailings Remedial Action (UMTRA) sites.
- Remediation of 5,000 public and private properties contaminated with uranium tailings.
- Completed 119 Remedial Actions.
- 100 facilities have been decommissioned.
- 9 Site-Specific Advisory Boards have been established.
- 30.4 million cubic meters of soil and uranium tailings removed.
- 16 million pounds of scrap metal recycled.
- 2.4 billion gallons of ground water and 1.8 billion gallons of surface water treated.
- 500 tanks removed or replaced.
- 55,000 pounds of shrapnel and ordnance removed.

GENERAL

Mr. Myers. You will be proposing that Congress appropriate money to this program on a site-by-site basis to give DOE management and regulators maximum flexibility to allocate resources among site priorities. Since you perceive that Congress is the problem in not providing enough funding flexibility by site, will you also be reorganizing your headquarters organization by site rather than program? In your current organization structure, there are at least four major organizations and hundreds of employees who have multiple, duplicative and overlapping responsibilities for each site. It appears the current organization and its disaggregate program responsibilities for each site also contribute to lack of flexibility and inefficiencies in administering program resources.

Mr. Grumbly. First, the Department does not perceive that Congress is "the problem." The problem is that, between the time a budget is requested, appropriated and implemented, significant "real world" changes occur in the field resulting in a need to shift funds between appropriations accounts, e.g., to address urgent risks, or take advantage of cost savings opportunities. Shifting funds before a budget request is simple. Shifting funds after a budget is requested is less simple. Shifting funds after an appropriations bill is enacted is more difficult and can only be done in two ways: shifting funds between sites within a line program budget (e.g., Waste Management, Environmental Restoration, etc.), which raises administrative and public perception problems, or shifting funds within a site between line organizations, which requires cumbersome, administrative review (site office, operations office, headquarters line program, headquarters staff offices) and Congressional approval for very low thresholds (i.e., $1 million) between accounts.

Second, the EM program has already been reorganized by sites below the Deputy Assistant Secretary level. During 1993, EM underwent a reorganization to eliminate previous program categories, especially in the Office of Waste Management and the Office of Nuclear Materials and Facilities Management, and establish regional offices with individuals responsible for certain sites. The entire Departmental organization is now undergoing revision as part of the Strategic Realignment effort. Following the conclusion of this effort, EM will likely consider additional reorganization to ensure consistency with the Department's overall organization. The roles and responsibilities between Headquarters and the field were reexamined in 1994. A similar review of Headquarters functions will also be undertaken. Further focus on sites is one consideration, but because of the disruptions of reorganizations, any changes are being carefully considered.

Mr. Myers. What financial and management options other than appropriating funds by site have you reviewed which could allow more flexibility at each site?

Mr. Grumbly. The Department's preference for providing the necessary flexibility and accountability to site managers is to appropriate funds by site. We are examining other possible options to provide more flexibility to each site. Among them are streamlining the Department's reprogramming process, establishing higher funding thresholds for internal reprogrammings, and proposing that more activities be funded strictly from operating expenses. Currently, the reprogramming process takes much too long to redirect needed resources. This process needs to be streamlined. We are working with other Departmental organizations and the Office of Management and Budget to improve the process. Higher reprogramming levels would also provide more flexibility since the need for official reprogrammings would decrease. Lastly, having more activities, e.g.; safety analysis reports, project and design documents, and NEPA documentation funded entirely by one type of funding (operating expenses), like the Environmental Restoration program, would provide much needed flexibility for Environmental Management efforts. We look forward to working with your staff to achieve an acceptable solution to this problem.

Mr. Myers. How will this budget request affect DOE's ability to comply with the Federal Facility Compliance Act? Will DOE meet the requirements of the Act and get agreement with the States and the Environmental Protection Agency on the required site treatment plans?

Mr. Grumbly. The FY 1996 budget requests funds necessary to begin implementing the Federal Facility Compliance Act (FFCAct), including funds to operate existing treatment facilities and to start design of others. However, the vast majority of costs to implement the FFCAct will occur in the outyears past FY 1996, since we need to develop significant additional treatment capacity (either through construction of new facilities or procurement of new services from the private sector.)

No later than April 6, 1995, DOE will formally submit Proposed Site Treatment Plans required by the FFCAct containing schedules for developing treatment capacity or getting the waste treated. The States or EPA will then have six months to consider these plans and approve, modify or disapprove them. We have worked with the States and EPA through a "bottom up" process over the last 2 years to establish an acceptable approach to this treatment program. We have had much success in developing a common understanding of problems and in sorting out issues related to "configuration" of the waste treatment facilities (i.e., which waste will be treated at which sites). This has resulted in the blending of the bottom up Draft Site Treatment Plans into a reasonable, national configuration of treatment systems. The issue of treatment schedules has recently crystallized in our discussions with the States and EPA, and it is clear that outyear budget constraints will be a major factor in the pace of mixed waste treatment. Under current preliminary budget targets for the waste management program, construction of many of the large facilities would be pushed far out into the future, despite efforts by our sites to pursue smaller, more targeted alternatives for treatment, or privatization efforts. To construct these facilities more rapidly, funds will need to be shifted from lower priority Environmental Management activities.

As part of our ongoing dialogue with the States and EPA, DOE recently raised the near-term problem of what schedules to present in the Proposed Plans. The States and EPA recommended that DOE present the schedules consistent with current Waste Management budget targets, even though some facilities will be significantly delayed. As a basis for dialogue, we will also provide alternative, more rapid schedules based on a shift of other EM funding into the mixed waste treatment program. This approach will allow regulators and citizens to be part of the process that examines priorities at the sites and identifies schedules for mixed waste treatment and other activities consistent with those priorities.

Environmental Management is working with the States and other stakeholders on the EM budget for all programs. The initiative will involve them in budget development and priority-setting for FY 1997 and the outyears. The debate on the priority of mixed waste treatment vis-a-vis other activities within the EM program will be a major part of this discussion. Although we cannot be certain at this time, we are optimistic this process will likely resolve the issue of schedules for mixed waste treatment and result in a set of site treatment plans agreeable to both the regulators and the Department.

OVERSIGHT AND COMPLIANCE ACTIVITIES

Mr. Myers. The Environmental Management program has oversight from the Defense Nuclear Facilities Safety Board, DOE's Office of Environment, Safety and Health, and by the Office of Compliance and Program Coordination within your own organization, as well as regulators from States and the EPA. How is this adding to the cost of your programs?

Mr. Grumbly. Some level of oversight of Departmental programs is necessary to ensure that the programs are being carried out appropriately. The organizations you mentioned in your question all have different purposes. Understanding these differences helps to distinguish the value added by each group and therefore, explain why I believe the cost of maintaining these functions is not only justifiable, but relatively inexpensive given the services they provide to the Office of Environmental Management (EM). The input we receive from these groups helps foster superior performance which ultimately translates into improved public (i.e., customer) satisfaction.

The Defense Nuclear Facility Safety Board (DNFSB) provides external oversight of the Department's defense facilities and reviews and evaluates the content and implementation of the standards relating to the design, construction, and operations, and decommissioning of defense nuclear facilities (including applicable DOE orders regulations and requirements). The Board recommends to the Secretary of Energy specific measures that should be adopted to ensure that public health and safety are adequately protected. The Office of Environment, Safety and Health (EH) provides internal, independent oversight of the Department's environment, safety and health programs. It has recently been reorganized so that all environment, safety and health "oversight" functions have been consolidated under the Deputy Assistant Secretary for Oversight. This Office evaluates and reports to Department of Energy management and outside authorities, such as Congress, on the status of Departmental environment, safety (including nuclear safety), health, and safeguards and security policies and programs and as a general rule, is the only headquarters organization that can conduct independent oversight (i.e., bypass line and field organizations) at the contractor level.

In contrast to the external and internal oversight organizations noted above, there is very little, if any, oversight from the Office of Compliance and Program Coordination that is comparable to that provided by the DNFSB and EH. I established the Office of Compliance and Program Coordination within my organization to provide me with assurances that my program is leading the way toward new standards of excellence in restoring, protecting, and enhancing the environment and will serve as the model for public management of environmental protection activities in full compliance with all requirements. As part of my EM Headquarters reorganization, I purposefully shifted the focus of the Office of Compliance and Program Coordination (formerly known as the Office of Oversight and Self-Assessment) from a traditional oversight function to a coordination and technical/policy implementation assistance role for the entire EM Program, in essence, the cross-cutting technical assistance arm of my line organization within the Department. Staff in this Office work across all of the sites and all of the EM programs. This new focus is specifically geared toward applying a corporate-wide perspective to EM activities and thereby improve program performance. Several groups within this office continue to have limited appraisal functions, in conjunction with the field, to enable me to maintain accountability of my program. In particular, the appraisal functions cover the safety and health, operations, and quality assurance areas.

In addition to the limited appraisal function, the Office provides legal and policy implementation assistance to the EM Program in the development of compliance agreements and provides technical assistance in conducting work to ensure that my program is in compliance with CERCLA, RCRA, NEPA, as well as the other environmental regulations, safety and health standards and Occupational Safety and Health Administration requirements. The Office also provides the Department with its overall transportation policy and practices, as well as functioning as my emergency management program official.

Oversight from state regulators and the Environmental Protection Agency largely is in the form of field inspections (e.g., adequacy of hazardous waste storage facilities) and review of technical analyses and decision documents used to select environmental cleanup remedies. It is true that we are sometimes caught in the middle, with the state regulators and the Environmental Protection Agency giving us conflicting directions on how to proceed. I have begun an initiative to "partner" with the Environmental Protection Agency (Headquarters and Regional levels) and the states in the review of agreements and work products associated with them to eliminate this problem.

Compliance with requirements (including those of the states and the Environmental Protection Agency) is necessary for protection of the public and the environment as well as worker health and safety. Excessive oversight from the DNFSB, EH, and other internal and external oversight groups, inappropriate and inconsistent responses to oversight findings, and failure to heed lessons learned from previous responses to similar oversight findings all add to the cost of doing business. As noted above, a major function of my Office of Compliance and Program Coordination is to lead the effort to develop EM corporate responses to conclusions and recommendations from these external (to EM) oversight groups. In that context, the Office serves to reduce the cost of doing business in the Environmental Management Program by providing the technical assistance and guidance necessary to minimize the impact of responding to oversight findings and improving the quality and efficiency of those responses.

The Secretary has established a federal advisory committee on external nuclear safety regulation. The first meeting of the committee was held on March 9 and 10, 1995. The committee will be examining the existing oversight and regulatory system, assessing its appropriateness, and making recommendations to the Secretary. An interim report is due in six months. Cost-effectiveness and unnecessary duplication are among the criteria that will be used in formulating recommendations to the Secretary.

Mr. Myers. Can you quantify how much program costs could be reduced by coordination of oversight and compliance activities?

Mr. Grumbly. I agree with your concern that oversight activities need to be coordinated to minimize both the cost and time impacts associated with these reviews. We, in the Office of Environmental Management, and in particular in the Office of Compliance and Program Coordination, are trying to coordinate all Environmental Management Headquarters reviews of the field. That is a primary function of the Site Coordination Staff in that Office and we are beginning to see results from coordinated reviews. We are also working with staff in the Office of Field Management to create a clearinghouse on all internal and external reviews of Departmental activities to rationally influence the timing and cumulative impact of various reviews of field activities.

While at this time I cannot quantify the cost reduction we are seeing by coordinating oversight reviews, cost savings are inherent in improved efficiency in the use of Headquarters and Field Office resources. I also believe that actual program costs will be reduced due to the improved performance which results from these reviews. The need to consolidate roles of DOE oversight offices was also noted in the report prepared by the Task Force on Alternative Futures for the Department of Energy Laboratories. Information on the cost savings associated with this recommendation is currently being gathered.

Mr. Myers. This committee funds separate oversight and compliance organizations such as the Defense Nuclear Facilities Safety Board and the Office of Environment, Safety and Health with the expectation that all parties will work together in the most efficient manner to reduce costs to the taxpayers. Why do you need your own Office of Compliance and Program Coordination to duplicate the efforts of these separate oversight organizations? Can't you all work together?

Mr. Grumbly. The EM Office of Compliance and Program Coordination (EM-20) does not duplicate the efforts of the DNFSB or the Office of Environment, Safety and Health (EH). It serves to strengthen programmatic functions at the level where the work is actually performed. The DNFSB and EH provide essential and truly independent oversight, reporting directly to the highest levels. The Office of Environment, Safety and Health (EH), for example, functions at a Secretarial level by monitoring and reporting on the Department's overall implementation of environment, safety and health policy. In contrast to the independent internal oversight and external oversight activities, the Office of Compliance and Program Coordination functions primarily as the technical assistance arm of line management, providing the operative Program Office perspective to foster integrated safety and health programs in the field. A primary function of the Office is to take the lead in responding to the audit findings from EH and the recommendations from the DNFSB that have corporate applicability to EM. The Office provides a single focal point for independent oversight organizations to coordinate cross-cutting issue resolution and questions regarding safety and health at EM facilities.

The Office of Compliance and Program Coordination assists all line organizations, including field offices, with implementing safety and health policies and practices and to monitor the adequacy of performance. A primary focus of these activities is to ensure the management systems in place are adequate to oversee operating contractor activities. This "oversight" function, however, differs from the more traditional oversight functions offered by EH and the DNFSB in that EM-20 works in partnership with the line to improve those practices by making them more efficient, effective, and economical. While there remains a need for independent internal and external oversight to measure the functional adequacy of the line's safety and health programs and practices, technical assistance is most effective and efficient when provided internal to the Program Office, thereby ensuring truly independent oversight by others. This direct support of the line is crucial to ensuring that the safety and health policies developed by EH and others can be explicitly applied to EM facilities, are properly understood and implemented uniformly in the field, and that appropriate training is provided for precise implementation.

With the intimate knowledge gained by working as part of the line, the Office of Compliance and Program Coordination is in the unique position to promptly interpret and disseminate information to senior DOE management. The Office coordinates with other DOE headquarters line elements to ensure a common approach and preclude the field from receiving conflicting guidance from different HQ elements. The Office does work closely with EH and the DNFSB to maintain this tiered approach to safety and health which comprises coordination and assistance (EM-20), policy development and internal independent oversight (EH), and external independent oversight (DNFSB).

GOALS FOR FY 1995 AND FY 1996

Mr. Myers. Please list for each site the most significant actions to be completed in Fiscal Years 1995 and 1996.

Mr. Grumbly. Listed below, by the Department's goals, are the significant actions for each site in FY 1995 and FY 1996.

MANAGE AND ELIMINATE THE URGENT RISKS AND THREATS IN OUR SYSTEM

Colorado

Rocky Flats
FY 1995: Continue the the safe storage of 12.9 metric tons of plutonium in both solid and liquid forms, 569 kilograms of uranium-235 stored in a liquid form, 1,400 yd^3 of transuranic and mixed transuranic waste, and 21,000 yd^3 low level and mixed low level waste. Repackage 250 plutonium containers; thermally stabilize 50 kilograms of plutonium oxide; treat by precipitation 300 liters of highly concentrated plutonium solution; solidify 1,000 liters of solutions through cementation; and ship 1,500 liters of highly enriched uranium solutions for processing to a solid form.

FY 1996: Repackage 1,400 plutonium metal storage containers and thermally stabilize the resulting plutonium oxide. Drain 7,000 liters of plutonium solutions from storage tanks and continue treatment by precipitation and cementation. Ship the remaining 1,400 liters of highly enriched uranium solutions for processing to a solid form.

Idaho

Idaho National Engineering Laboratory
FY 1995: Completing plans for the safe removal of 150 kilograms of highly enriched uranium from the Dry End Processing facility to avoid potential criticality event. Continuing to improve safety of spent fuel storage by completing the transfer of 179 spent fuel elements to safer storage.

New Mexico

Los Alamos National Laboratory
FY 1995: Complete decontamination and dismantling of the last 10 of 44 Chemical Plant buildings, and TA-21 Buildings 3 North and 4 South which contained gloveboxes of plutonium and highly enriched uranium, and the Phase Separator Pit.

South Carolina

Savannah River Site
FY 1995: Continue the safe storage of over 340,000 liters of plutonium solutions, 20,000 liters of transplutonium solutions, 227,000 liters of highly enriched uranium solutions, several hundred metric tons of corroding aluminum-clad targets and nuclear fuel elements containing plutonium and fission products, and several thousand containers of plutonium and transplutonium mixed solids, scraps and residues. Complete stabilization upgrades of the F-Canyon and FB-Line plutonium processing facilities. Begin operating the Defense Waste Processing Facility in December 1995 to convert high level waste from a liquid to a glass-based solid in preparation for permanent storage.

FY 1996: Complete stabilization of the F-Canyon plutonium-239 solutions. Complete the invironmental impact statement on th interim management of nuclear materials including the H-Canyon plutonium-242 solutions and the Mk-31 aluminum-clad targets and implement decisions regarding the stabilization of these materials. Complete the construction of the TNX groundwater treatment unit.

Tennessee

Oak Ridge National Laboratory
FY 1996: Operate the TSCA Incinerator at Oak Ridge and complete incineration of 5 million pounds of liquid mixed/PCB contaminated waste by March 1996, several years earlier than planned. Complete reactor gas purge and trap at the Molten Salt Reactor Experiment (MSRE). Complete in-situ vitrification in the liquid disposal trench at Waste Area Group 7.

Washington

Hanford
FY 1995: Continuing the safe storage of 4.1 metric tons of plutonium in both solid and liquid forms, 2,600 metric tons of low enriched uranium and nuclear reactor fuel containing 16 metric tons of special nuclear material. Complete the thermal stabilization of 240 reactive Plutonium sludge items. Complete the deactivation of the UO3 (uranium oxide) Plant, remove the remainder of 20,000 liters of plutonium solutions from PUREX. Off-load the remaining 79 FFTF reactor fuel assemblies.

FY 1996: Complete removal of the 3,100 kilograms of spent fuel and the 700,000 liters of low enriched uranium in acidic solution from PUREX. Continue to improve safety of tank waste storage and start construction of a new spent fuel storage facility.

PROVIDE A SAFE, ACCIDENT FREE WORKPLACE

Headquarters/Complex-wide

FY 1996: Train thousands of workers through sponsorship of a Hazardous Waste Operations and Emergency Response program in cooperation with the National Institute for Environmental Health Sciences.

New Mexico

Los Alamos National Laboratory
FY 1995: Demonstrate a variety of modules to automate chemical and radiological sample analyses in order to reduce risk to workers and reduce costs. Completed EPA validation of automated data analysis methods.

Nevada

Tonopah Test Range
FY 1996: Remove, destroy and when possible recycle ordnance from five pits and landfills to make the areas safe for site workers involved in remediating the remainder of the sites.

BECOME MORE OUTCOME ORIENTED AND GET MORE RESULTS ON THE GROUND

California

Lawrence Livermore National Laboratories
FY 1995: Continue three interim actions to prevent further contaminant migration from former nuclear weapons design and testing laboratories into groundwater.

LEHR
FY 1995: Complete decontamination and decommissioning of the Imhoff Facility, the Cobalt 60 Building, and related waste disposal.

Sandia National Laboratories
FY 1995: Continue remediation of the Fuel Oil Spill site.

Colorado

Rocky Flats
FY 1995: The Accelerated Sludge Removal Project emptied 700,000 gallons of contaminated sludge that was leaking into the groundwater from the Solar Evaporation Ponds. The sludge was placed into permitted tanks. At 881 Hillside, an accelerated cleanup removed several cubic yards of radioactively contaminated soil with hand-held tools. Expedited removal saved millions of dollars from final remedial costs.

FY 1996: Continue treatment of 155,000 gallons of organic waste, 12,000,000 gallons of low level mixed aqueous waste, and approximately 400 gallons of miscellaneous waste. Continue disposal of 740 yd^3 of low level waste, 320 yd^3 of low level mixed waste, and over 800 drums of hazardous waste using off-site commercial facilities.

Gunnison
FY 1995: Complete remedial actions at this Uranium Mill Tailings Remedial Action Project site.

Rifle (Old and New)
FY 1995: Complete remedial actions at these two Uranium Mill Tailings Remedial Action sites.

Slick Rock
FY 1995: Remediation will be completed at these two Uranium Mill Tailings Remedial Action sites.

Florida

Pinellas Plant
FY 1996: Complete corrective measures construction for the Northeast Site and remediation of West Fence Line.

Kentucky

Paducah
FY 1996: Complete various Interim Corrective Measure/Remedial Actions

Missouri

Kansas City Plant
FY 1996: Complete remediation for Miscellaneous Contaminated Sites and Outfall 001/NE Area, and initiate remedial actions for Department 26, Plating Building and TCE Still Area. Treat 50 million gallons of contaminated water at Weldon Spring.

Weldon Spring
FY 1996: Complete the removal of 120,000 cubic yards of Quarry bulk waste.

New Jersey

New Brunswick
FY 1996: Complete remediation of this FUSRAP site.

New Mexico

Ambrosia Lake Site
FY 1995: Complete remedial actions at this Uranium Mill Tailings Remedial Action Project site.

Inhalation Toxicology Research Institute
FY 1995: Complete remediation of Diesel Oil Release Area and Hot Ponds.

FY 1996: Complete remediation for sanitary lagoons.

Los Alamos National Laboratory
FY 1995: Complete remediation of the Waste Oil Storage Pit, and assessment of the Tritium Facility Group Buildings. Complete construction and operation of the Chemical Stabilization/Solidification pilot facility.

FY 1996: Complete removal of underground storage tank 18-008. Complete remediation of drainage ditches in Technical Areas 3, 59, 60, 61, and 64.

South Valley Superfund Site
FY 1996: Complete construction of the Deep Zone groundwater treatment system.

Waste Isolation Pilot Plant
FY 1996: Prepare compliance certification application for submittal to the Environmental Protection Agency for the Waste Isolation Pilot Plant to support operation in 1998 and complete required Land Withdrawal Act milestones.

New York

Battelle National Labs
FY 1996: Complete removal actions for cesspools.

Brookhaven National Labs
FY 1995: Complete D-Tank removal action.

Colonie
FY 1996: Complete FUSRAP building demolition.

West Valley Project
FY 1996: Begin vitrification radioactive operations in January 1996 to convert high level waste from a liquid to a glass-based solid in preparation for permanent storage.

Nevada

Nevada Test Site
FY 1996: Complete the first iteration of a regional groundwater model and begin implementing of a groundwater monitoring network based on the model. Complete a removal of surface soil contaminated with plutonium at the Double Tracks Site at Nellis Air Force Range. Begin or complete closure of three more RCRA sites.

Ohio

Fernald
FY 1996: Complete the demolition of four major plant structures. Complete the assessment and Records of Decision for all five Operable Units. Complete four Interim Actions, including the construction of the Advanced Waste Water Treatment Facility. Process and Dispose of over 1,166,880 cubic feet of Low Level Waste and 29,920 cubic feet of mixed waste. Complete two Remedial Actions, including the Operable Unit 4 Pilot Plant. Initiating one and complete one Removal Action.

Mound
FY 1995: Complete dismantlement of the Special Metallurgical Building and contaminated soil removal from the SM leachfield catch basin.

FY 1996: Characterize all mixed waste, and characterize and treat all PCB and mixed waste oil.

Alba Craft
FY 1995: Complete remedial action at this FUSRAP site.

Argonne National Labs - East
FY 1996: Completion of the decontamination and decommissioning and off-site disposal of 63 gloveboxes.

Associate Aircraft
FY 1995: Complete remedial action at this FUSRAP site.

HHM Safe Company
FY 1995: Complete remedial action at this FUSRAP site.

Battelle Columbus Laboratory
FY 1995: Complete of decontamination and decommissioning of building KA-4 which contains an encapsulation facility for highly enriched uranium, a metallography lab and a radiochemistry lab.

FY 1996: Complete the decontamination and decommissioning of all six King Avenue buildings.

B&T Metals
FY 1996: Complete remediation of this FUSRAP site.

Tennessee

Oak Ridge National Laboratory
FY 1995: Significantly reduce off-site contamination by completing the Collection and Treatment Facilities for Waste Area Group 5 seep.

K-25
FY 1995: Complete closure of K1407 B & C Ponds. Complete the repackaging of the deteriorating drums containing Pond Waste sludge.

FY 1996: Complete Interim Action at K1070 CD SW31 Seep modifying the collection and treatment facility.

Y-12
FY 1996: Continue to remove mercury in plant effluent.

Texas

Pantex
FY 1995: Executed Expedited Site Characterization (ESC) process at environmental restoration operable units. ESC enables on-site evaluation of sites, without the need to return to the laboratory for analysis. This process clearly identified the source and pathway of contaminants at Pantex at one-fourth the cost of traditional characterization methods.

Utah

Mexican Hat
FY 1995: Complete remedial actions at this Uranium Mill Tailings Remedial Action Project site on the Navajo reservation.

FOCUS THE TECHNOLOGY DEVELOPMENT PROGRAM ON DOE'S MAJOR ENVIRONMENTAL MANAGEMENT ISSUES

Idaho

Idaho National Engineering Laboratory
FY 1996: Demonstrate a novel industrial method for removal of cesium, strontium, or technetium from a variety of actual liquid wastes and contaminated waters. This new technology is very selective (thus minimizing waste volumes), can operate at extremely low contaminant concentrations and extremely high flow rates, and can remove virtually the total contaminant.

Kentucky

Paducah
FY 1995: Demonstrate the Electro-osmotic technology for remediation of Dense Non Aqueous Phase Liquids (DNAPLs) such as gasoline or chemical toxins in clay soils. This demonstration is a cooperative effort with other federal agencies and private industry and will significantly reduce costs and time required for remediating DNAPLs.

New Mexico

Sandia National Laboratories
FY 1995: Demonstrate two advanced landfill covers, subsurface grouting materials, and emplacement methods for containing landfill buried waste. Demonstrate two long term monitoring technologies to verify the integrity and performance of containment systems. These activities will prevent future migration of contaminants and reduces potential risks.

FY 1996: Demonstrate automated tools for mapping, positioning, control, and collision avoidance for tank remediation. This is an important step forward since deployment of remediation tools in tanks cannot be done today.

Ohio

Portsmouth Gaseous Diffusion Plant
FY 1995: Complete RCRA closures of X-344 settling tank and X-735 sanitary landfill. Demonstrate characterization and treatment technologies for removing gasoline and chemical toxins in clay soils using a Multi-Point Injection System. This process will accelerate remediation, resulting in decreased remediation costs. Demonstrate the cleaning of equipment metal interior surfaces using a low temperature gas phase process. Successful completion will provide an alternative process that will reduce the cost of equipment dismantlement, reduce personal protective clothing requirements and increase worker productivity.

South Carolina

Savannah River Site
FY 1995: Groundwater remediation programs will be enhanced with the completion of the Vados Zone groundwater remediation system and the use of EM-developed air stripping technology.

FY 1996: Complete the decontamination and demolition of the 232-F Old Tritium Facility. Complete remediation designs at three additional waste units, and continue groundwater remediation by air stripping.

Tennessee

Oak Ridge National Laboratory
FY 1995: Demonstrate the decontamination of a concrete surface using a microwave scabbling process. Successful completion will provide a process of removing the top two centimeter layer of concrete at a reduced cost from the industry accepted mechanical scabbling process.

FY 1996: Continue action on treatability study to remove sludge from Gunite Tanks. Demonstrate dual-arm work module deployment technology applicable to decontamination and dismantlement and tank waste retrieval operations.
Washington

Hanford
FY 1995: Conduct a full-scale demonstration of a high-pressure water jet system to enable cutting, mobilization, and retrieval of high-level waste in underground storage tanks. This capability does not currently exist for a significant fraction of the waste (hard salt-cake) which is necessary to satisfy tank closure requirements.

FY 1996: Complete development and delivery of a Light Duty Utility Arm (LDUA) system to survey tank structural integrity, conduct chemical analysis, and provide the tank and waste mapping necessary to plan retrieval, waste processing, and pretreatment operations required by Federal Facility Compliance Agreements. Demonstrate the cutting of thick metal sections using a laser system. Develop a fully functional, full-scale robotic tank waste retrieval test/demonstration system. Demonstrate an innovative Infrared Spectroscopy system on radioactive waste to assay waste constituents in real time. Complete development of a full-scale tank waste retrieval demonstration system.

DEVELOP STRONG PARTNERSHIPS BETWEEN THE DEPARTMENT AND ITS STAKEHOLDERS

Alaska

Project Chariot
FY 1995: Complete negotiations will be completed for an Agreement-in-Principle (AIP) to fund state oversight of DOE clean-ups in Alaska. Among other things, it will allow DOE to proceed with installing an environmental monitoring station at Point Hope, Alaska near the Project Chariot clean-up site. A local resident will manage the station which will, among other things, provide residents with real-time information on ambient gamma radiation levels in their environment.

Texas

Pantex
FY 1995: Complete negotiations on a Federal Facility Agreement with the State of Texas and the Environmental Protection Agency.

Mr. Myers: What process was used in the development of the fiscal year 1996 budget to prioritize the cleanup activities in this program at each site?

Mr. Grumbly: At each of its sites, the Environmental Management program budget is developed to address urgent risks first. Following this, budgets are used to accomplish the other strategic goals of the program: protect worker safety, demonstrate tangible results, improve managerial and financial control, develop more effective technologies, and improve stakeholder partnerships. To the extent possible, budgets are developed involving regulators and other stakeholders. Approximately 65 percent of the Department's Environmental Management budget is driven by various legal requirements, including eight distinct categories. These are 1) requirements of compliance agreements signed by DOE with EPA and the States, 2) requirements of a court order or consent decree, 3) requirement of a Federal statute or regulation (including permits in place), 4) requirements of State or local statute or regulation (including permits in place), 5) requirements of DOE orders relevant to Environment, Safety, and Health, 6) requirements of DOE orders, 7) requirements by Agreements-in-Principle with States or agreements with Indian Nations, and 8) requirements to meet proposed compliance agreements (in negotiation, but not yet signed).

We are implementing risk-principles into our budget allocation process to better address urgent risks first, and in a cost-effective manner. One example of how we are innovating is with our proposed Rocky Flats budget. This new "site-based" budgeting style will allow greater flexibility and responsiveness to site managers so that they can more quickly respond should new information or conditions change risk priorities.

LITIGATION ISSUES

Mr. Myers. Please describe the major issues under litigation affecting this program and the resolution of any lawsuits during the past year.

Mr. Grumbly. The Department is involved in a number of suits affecting this program. The major issues in the most significant of these suits are briefly summarized below. Those summaries preceded by a bullet have not been resolved, and those summaries preceded by an asterisk (*) have been wholly or partially resolved since January 1, 1994:

- ● *Appalachian States Low-Level Radioactive Waste Commission v. O'Leary* (M.D. Pa.), is a mandamus action to compel DOE to rebate Low-Level Radioactive Waste Policy Amendments Act escrow funds that have been collected from generators of low-level radioactive waste.
- * *Caudill v. United States* (Cl. Ct.), was a claim raised by private property owners and lessees near the Fernald Plant for inverse condemnation, Fifth Amendment taking and violations of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) resulting from groundwater contamination. The case was dismissed on plaintiff's motion.
- * *Central Midwest Interstate Low-Level Radioactive Waste Commission v. O'Leary* (C.D. Ill.), was an action for declaratory and injunctive relief compelling DOE to rebate to the states and compacts Low-Level Radioactive Waste Policy Amendments Act escrow funds that have been collected from generators of low-level radioactive waste, in which the court previously upheld the adequacy of DOE's surcharge rebate procedures and denied the plaintiffs claim for relief. The court denied the plaintiff's request for attorney fees under the Equal Access to Justice Act.
- ● *Concord Oil Co. v. Texas Water Commission* (Travis Co. Dist. Ct.), is an action objecting to the manner in which DOE is performing remediation of abandoned uranium mill tailings in Karnes County, Texas. The plaintiffs filed an appeal in state court from the Texas Water Commission's decision to grant MK Ferguson, our contractor on site, a waste water discharge permit.
- ● *Energy and Resources Advocates v. O'Leary* (N.D. Cal.), is an action alleging that DOE has failed to comply with National Environmental Policy Act in connection with the Transuranic Management by Pyroprocessing-Separation (TRUMP-S) Program.
- * *Euchee Marina & Campground v. Union Carbide Corp.*, (E.D. Tenn.), is a case filed by nine businesses located on Watts Bar Lake alleging that DOE's Oak Ridge contractors have been discharging radioactive materials, heavy metals, PCBs and other toxic materials into Watt's Bar Lake. A settlement in principle has been reached with the plaintiffs.
- ● *Friends of the Earth, Inc. v. O'Leary* (E.D. Tenn.), is a citizen's suit under the Clean Water Act alleging violations of National Pollutant Discharge Elimination System permit limits at Oak Ridge.
- ● *Hanford Nuclear Reservation Litigation* (E.D. Wash.), is a consolidation of class action suits against past and present Hanford M&O contractors seeking damages

for emissions of radioactive and hazardous materials from the plant.

- *Heart of America v. Westinghouse Hanford Co.* (9th Cir.), is an action against DOE and Westinghouse, the M&O contractor at the Hanford site, alleging violations of the Clean Water Act and Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) reporting requirements, in which the district court dismissed all of the plaintiffs' claims against DOE and Westinghouse based on the jurisdictional bar of CERCLA section 113(h). The appeals court dismissed the plaintiffs' appeal pursuant to the parties' stipulation.
- *Homestake Mining Co. v. United States Nuclear Regulatory Commission* (D. Colo.), is a case where the plaintiff is seeking reimbursement from the U.S. government of reclamation and other environmental response costs incurred by the plaintiff as a result of uranium milling activities.
- *Iotech, Inc. v. United States* (Fed. Cl.) is an action in which the plaintiff alleged breach of express and implied-in-fact warranties in connection with the lease of cesium-137 capsules to the plaintiff. The court claim was dismissed and is currently in administrative proceedings.
- *McKay v. United States* (Fed. Cl.), is an action in which the plaintiffs seek damages and other relief for the alleged contamination of their land near the Rocky Flats Plant Site.
- *Nevada v. O'Leary* (D. Nev.), is a case in which the State of Nevada is seeking an injunction to prevent further shipments of low-level radioactive waste to the Nevada Test Site pending completion of a site-wide Environmental Impact Statement. The court has previously entered an order granting our motion to dismiss the plaintiff's claims regarding the shipment of low-level radioactive waste from the jurisdictional bar of CERCLA section 113(h). The court's order further dismissed the plaintiff's claims regarding the preparation and contents of the Nevada Test Site Environmental Impact Statement on mootness and ripeness grounds, respectively. However, the court's order left remaining the plaintiff's claim for injunctive relief concerning the disposal at Nevada Test Site of low-level radioactive waste from facilities other than Fernald.
- *New York v. DOE* (N.Y.N.Y.), was a suit seeking to compel DOE to comply with the fee requirements of the State's Environmental Regulatory Fees Act. After the court granted the state's motion for partial summary judgement, finding the environmental fees at issue to be reasonable, the state revealed that it had exempted certain state agencies from paying the fees. The Department is considering reopening the case to allege discrimination.
- *Northern States Power Co. v. Prairie Island Mdewakanton Sioux Indian Community* (D. Minn.), is an action to bar the Tribe's Prairie Island Community Nuclear Radiation Control Ordinance on the ground that the ordinance is preempted by the Hazardous Materials Transportation Act of 1974. On remand from the court of appeals, the district court permanently enjoined the Tribe from enforcing the ordinance.
- *Public Service Company of Colorado v. DOE* (D.D.C.), is an action challenging DOE's Final Uranium Enrichment Decontamination and Decommissioning Fund Rule.
- *Sierra Club v. DOE* (D. Colo.), is an action to require DOE to obtain a Resource

Conservation and Recovery Act (RCRA) permit for mixed residues stored at Rocky Flats. Based on the parties' agreement, the Court entered orders on February 17, 1994, and August 25, 1994, establishing milestones and procedures for expediting the permit process.

- *State of Arkansas v. DOE* (E.D. Ark.), is a suit to enjoin DOE from sending hazardous waste containing trace amounts of radioactive material into Arkansas for treatment and disposal and seeking civil penalties against a DOE contractor for past shipments of mixed-waste.
* *State of New Mexico v. O'Leary* (4th Cir.), is a consolidated Federal Land and Policy Management Act (FLPMA), National Environmental Policy Act (NEPA) and Resource Conservation and Recovery Act (RCRA) interim status action in which the district court enjoined DOE from beginning the test phase at Waste Isolation Pilot Plant (WIPP). The FLPMA claims were rendered moot by Congressional land withdrawal legislation.
* *State of South Carolina v. O'Leary* (4th Cir.), is a NEPA action challenging the Environmental Assessment of Urgent-Relief Acceptance of Foreign Research Reactor Spent Nuclear Fuel (EA) and seeking to enjoin shipments of spent nuclear fuel to the Savannah River Site pending completion of an Environmental Impact Statement. On appeal, the Fourth Circuit overturned the district court's preliminary injunction allowing the first shipment to proceed. On remand for a hearing on the merits, the district court entered a permanent injunction disallowing any further shipments under the EA. DOE has appealed the district court's decision and permanent injunction.
- *Stepp v. Monsanto Research Corp.* (S.D. Ohio), is a class action lawsuit filed on behalf of property owners and/or residents of Montgomery County, Ohio, against the present and former M&O contractors at DOE's Mound Facility which seeks compensatory damages, punitive damages, medical monitoring and response costs under CERCLA for alleged radioactive and toxic emissions.
- *United States v. Gencorp.* (N.D. Ohio), is an action against several corporations including former DOE contractor RMI for recovery of CERCLA response costs at Fields Brook, Ohio.
* *United States v. State of New Mexico* (10th Cir.), was an action challenging the State's authority to issue a hazardous waste permit regulating the radioactive component of waste burned at a Los Alamos incinerator. The 10th Circuit upheld the lower court's determination that it is permissible for the State to restrict radioactive emissions from the incinerator while nonradioactive waste is burned.
- *United States v. Smuggler-Durant Mining Corp.* (D. Colo.), is a CERCLA action concerning the cleanup of a mining site in which the defendants have filed a counterclaim against DOE (as successor agency to the Atomic Energy Commission) and other federal agencies for contribution.
- *Yankee Atomic Electric Co. v. United States* (Fed. Cl.) is a suit alleging the government improperly imposed a retroactive price increase and "taking" on the plaintiff by assessing costs for the Uranium Enrichment Decontamination and Decommissioning Fund.

There are also four issues pending before the Interstate Commerce Commission (ICC) regarding the rail transportation of spent nuclear fuel. First, the Department of

Energy is seeking damages for excess charges from the railroads for shipments of spent fuel and the return of empty cars which moved as recyclables in the period of March 1978 - April 1992. At the end of 1994 the amount of these excess charges plus interest was $18 million. Second, DOE is seeking further damages for overcharges for shipments during that period that were not classified as recyclable and for shipments after April 1992. Third, for future shipments of spent nuclear fuel and related commodities DOE is seeking substantial rate reductions - up to 90%. Finally, the railroads have cancelled major tariffs for the shipment of radioactive material and we are attempting to get the ICC to order them to republish those tariffs to broaden the available route options and to allow the tariffs to be available to all government and commercial shippers.

ECONOMIC DEVELOPMENT

Mr. Myers. Identify the program and site and describe all economic development funding included in fiscal years 1994, 1995, and 1996.

Mr. Grumbly. The Office of Nuclear Materials and Facilities Stabilization has budgeted for a limited number of economic development activities. (summarized below)

At Hanford, $6 million was included in the FY-1995 budget to support the following economic development projects: an Agri-Business Center to foster five new "seed" businesses within the local economy; five closely coordinated analytical studies to address impacts to site workers potentially affected by Hanford's changing mission; telecommunications upgrades and resource database development to support science and technology park; small business partnerships to provide micro-loans to start-up and expanding businesses; a Hanford Regional Planning Commission to integrate comprehensive land use planning; and a minority Business Resources Center to assist in the startup and successful operation of business.

For Hanford in FY-1996, $2 million has been requested to continue commercialization for available technologies to accomplish the clean-up mission with the goal of economic diversification.

At Rocky Flats, $1.9 million and $9 million in FY-1994 and FY-1995 respectively, have been budgeted for the National Conversion Pilot Project (NCPP). Although this project is at an EM facility, the funding was derived from the Office of Defense Programs budget as part of their economic development activities. Specifically, at Rocky Flats, the objectives of the NCPP are: to develop a process to convert DOE surplus defense production facilities to other uses; team with DOE stakeholders and regulators to resolve conversion; make immediate, tangible progress in cleanup activities; protect the environment through recycling; redeploy displaced workers and surplus facilities; enhance the local economy and save welfare and associated social services costs; potentially save storage and waste management costs; and provide DOE and interested private businesses with reports and other documents describing the pilot process that can be used to assist other DOE sites in conversion. The Department is continuing to evaluate the efficacy of this project in order to determine future funding needs.

At Mound, economic development activities received $358,000 of FY-1994 appropriated funds. These funds were used to initiate DOE planning for the ultimately successful leasing of Mound facilities and equipment to the community reuse organization.

CORPS OF ENGINEERS FUNDING

Mr. Myers. Briefly describe any role the Corps of Engineers has in this program and provide funding by site.

Mr. Grumbly. I have provided a summary of the Corps of Engineers funding profile by site, below. I have also provided additional information concerning the role of the Corps in the Environmental Restoration program.,

Site	Fiscal Year 1995	Fiscal Year 1996
Weldon Spring	$15.3 million	$17.4 million
Pantex	$16.5 million	$5 million
Hanford	$4.8 million	$1.0 million
Savannah River	$1 million	$1 million
Fernald	$900,000	$900,000
Rocky Flats	$500,000	$500,000
Grand Junction	Under $50,000	$60,000-180,000
UMTRA	$129,000	$154,000

The Corps of Engineers serves as the agent for the Army to administer funds to Weldon Spring Site. The Corps provides funding as part of a cost sharing agreement for the clean up of the Chemical Plant area of the site.

The Corps manages the assessment program at Pantex and is thus responsible for the conduct of field characterization work and preparation of the multiple document submittals required under the RCRA corrective action process (e.g., Corrective Measures Studies).

For the Environmental Restoration program at Hanford, the U.S. Army Corps of Engineers has provided technical and engineering services to the program, such as cost estimating, construction management and design, and remediation. In FY 1994, the Corps had the responsibility to complete the remediation of the North Slope and the Arid Land Ecology. These remediation activities resulted in 46 percent of the Hanford site being completed.

The Corps was also working on the Environmental Restoration Disposal Facility (ERDF). In February 1995, however, the Corps of Engineers was replaced on the project by the new Environmental Restoration Contractor (ERC), Bechtel Hanford, Inc., in order to place greater accountability for the entire cleanup program on the ERC. Originally, the Corps of Engineers was performing the design and construction management work for the ERDF, but DOE decided that it was in the best interest of DOE to give complete control of the program to the ERC, and thus give the ERC more incentive to be more efficient and productive during construction of the ERDF. The reduced future role of the Corps in the cleanup program at Hanford will consist of wellhead surveying, topographic mapping, and program management support services.

At the Savannah River Site the U.S. Army Corps of Engineers provides cost estimating and cost estimate review services to the Environmental Restoration program on a contract basis.

At the Fernald site, the Corps of Engineers has provided the following areas of support: off-site remediation services for contaminated soils and groundwater, provided off-site remediation and real estate support in the area of easement and other acquisitions; and real estate planning, which involves preparing a long range planning report.

At Rocky Flats, the Corps of Engineers provides the support in wetlands delineation and seismic processing. Rocky Flats plans no new funding for the Corps of Engineers in fiscal years 1995 or 1996. From a grant of $144,000 made to the Corps in FY 1993 to identify and delineate wetlands on the Rocky Flats Plant, $40,000 was carried over and will be costed in FY 1995.

At the Grand Junction Projects Office in Colorado, the Corps will provide support for the transfer of title for Title II uranium processing sites to the Department of Energy. The costs will depend upon the number of sites that will be ready for transfer.

The Corps provides to the Uranium Mill Tailings Remedial Action Project support for real estate transfers and cost estimating.

FINES AND PENALTIES

Mr. Myers. Describe any fines or penalties DOE paid in the fiscal years 1994, 1995, and 1996.

Mr. Grumbly. Since 1979 the Department has paid $5,675,051 in fines and penalties. A summary of the fines and penalties the Department and its management and operating contractors have paid to date is provided in the attached table. The table also includes other related payments made by the Department which were not specifically designated as fines or penalties.

Consistent with the terms of specific cleanup agreements, the Department has included specific appropriation language for fines and penalties in its budget request as follows:

> The FY 1994 budget request included $100,000 to be paid to the Environmental Protection Agency (EPA) for a stipulated penalty assessed under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) against the Hanford Site; the FY 1995 budget request included $100,000 to be paid to EPA for stipulated penalties assessed under CERCLA against the Portsmouth Gaseous Diffusion Plant and the Fernald Environmental Management Project; and in FY 1996, DOE is requesting $350,000 to be paid to the Hazardous Substances Response Trust for stipulated penalties assessed against the Rocky Flats Site.

FINES AND PENALTIES AND OTHER MONETARY ASSESSMENTS AGAINST DOE AND/OR DOE CONTRACTORS

HANFORD

PARTIES	STATUTE/TYPE OF NOTICE	FINE/PENALTY ASSESSED	AMOUNT PAID	FINE/PENALTY STATUS	DATE
DOE/WA	RCRA; WAC Chapter 173-303 Unilateral Order	49,000	0	U.S. District Court held no penalty recoverable against Federal Government	02/05/86
DOE/EPA Region 10	CERCLA FFA Stipulated Penalty	100,000	100,000	PAID Penalty amount agreed to by EPA/WA through dispute resolution process. $100,000 requested in FY 94 appropriations	12/19/91
DOE/Westinghouse-/WA	RCRA Compliance Order and Notice of Penalty	100,000		In lieu of penalty, $100,000 will be spent on environmentally beneficial projects	03/10/93
DOE/Army Corps/ WA	RCRA Mixed Waste Compliance order Notice of Penalty	9,500 (DOE)/ 6,000 (Corps)	TBD	4/15/94 State notifies DOE satisfaction of order compliance	03/09/94

ROCKY FLATS

PARTIES	STATUTE/TYPE OF NOTICE	FINE/PENALTY ASSESSED	AMOUNT PAID	FINE/PENALTY STATUS	DATE
Rockwell/EPA Region 8	TSCA/ Complaint	111,000	47,500	SETTLED	06/30/86
DOE/CO	RCRA/ Unilateral Order	95,800	95,800	PAID. Settled two orders. See 06/07/89 Order below	05/03/88
Rockwell/EPA Region 8	TSCA/ Complaint	35,000	0	SETTLED without payment	06/27/88
DOE/CO	RCRA/ Unilateral Order	0	0	See 05/03/88 Order	06/07/89
Rockwell/DOJ	RCRA and CWA/ Plea Agreement	18,500,000	2,800,000	SETTLED	03/26/92
DOE/EPA Region 8	CERCLA IAG/ Milestones	TBD	TBD	Renegotiation in Progress	03/16/93

NEVADA TEST SITE

PARTIES	STATUTE/TYPE OF NOTICE	FINE/PENALTY ASSESSED	AMOUNT PAID	FINE/PENALTY STATUS	DATE
DOE/ Contractor/NV	Nevada Haz. Waste Law/Order	20,400	20,400	PAID	05/24/93

FINES AND PENALTIES AND OTHER MONETARY ASSESSMENTS AGAINST DOE AND/OR DOE CONTRACTORS

OAK RIDGE *

PARTIES	STATUTE/TYPE OF NOTICE	FINE/PENALTY ASSESSED	AMOUNT PAID	FINE/PENALTY STATUS	DATE
DOE/TN	TN Air Act Order	6,500	6,500	PAID	10/13/88
Martin Marietta /TN	RCRA Commissioner's Order	12,500	9,400	PAID	03/14/89
DOE/Martin Marietta/TN	TN Haz. Waste Commissioner's Order	95,004	0	In lieu of payment of fine, DOE will complete environmentally beneficial projects	09/01/91
DOE/Martin Marietta/TN	TN Haz. Waste Commissioner's Order	8,000	TBD	Negotiations ongoing to preform environmentally beneficial project	01/08/92
DOE/Martin Marietta/TN	TN Haz. Waste Compliance Order	5,000	TBD	Negotiations ongoing to preform environmentally beneficial project	12/23/93
DOE/ Contractor /TN	TN Haz. Waste/ Commissioner's Order	200,000/ 800,000	100,00	100,000 paid; 200,000 conditional deferred penalty; 800,000 for environmental project assessed	06/01/94

* Includes the Oak Ridge Reservation, K-25, Y-12, Gaseous Diffusion Plant and the Laboratories.

FINES AND PENALTIES AND OTHER MONETARY ASSESSMENTS AGAINST DOE AND/OR DOE CONTRACTORS

LOS ALAMOS NATIONAL LABORATORY

PARTIES	STATUTE/TYPE OF NOTICE	FINE/PENALTY ASSESSED	AMOUNT PAID	FINE/PENALTY STATUS	DATE
University of Cal./NM	RCRA/ Violation of 05/07/85 Compliance Order	30,000	30,000	PAID. Contractor paid. Settles this order and the 08/30/88 order below.	10/25/85
DOE/ University of Cal./NM	RCRA/ Unilateral Order	0		See above.	08/30/88
DOE/NM	CAA/ Notice of Violation	20,000	TBD	Negotiations in progress	01/24/92
DOE/ University of Cal./NM	RCRA/ Order	1,200,000	700,000	SETTLED by contractor, reimbursed by DOE	02/03/93
DOE/ Contractor/ NM	RCRA Mixed Waste/ Compliance Order	26,040	TBD	Under negotiation	08/15/94
DOE/ Contractor/ NM	RCRA Mixed Waste/ Compliance Order	247,777	TBD	Under negotiation	09/08/94

FINES AND PENALTIES AND OTHER MONETARY ASSESSMENTS AGAINST DOE AND/OR DOE CONTRACTORS

LAWRENCE LIVERMORE NATIONAL LABORATORY

PARTIES	STATUTE/TYPE OF NOTICE	FINE/PENALTY ASSESSED	AMOUNT PAID	FINE/PENALTY STATUS	DATE
University of Cal./ EPA Region 9	2TCSA/ Complaint	59,500	0	SETTLED without payment	03/27/86
DOE/ Contractor/CA	RCRA Mixed Waste Notice of Violation	60,000	60,000	SETTLED through agreement	05/23/94

SANDIA NATIONAL LABORATORY

PARTIES	STATUTE/TYPE OF NOTICE	FINE/PENALTY ASSESSED	AMOUNT PAID	FINE/PENALTY STATUS	DATE
DOE/Contractor/ NM	RCRA/ Unilateral Order	10,000	10,00	PAID. Contractor paid, reimbursed by DOE; settled by compliance agreement	05/11/88
DOE/ Contractor/ CA	California Haz. Waste Law/ Complaint	240,000	56,000	SETTLED. Contractor paid 56,000, reimbursed by DOE	05/21/92

FINES AND PENALTIES AND OTHER MONETARY ASSESSMENTS AGAINST DOE AND/OR DOE CONTRACTORS

IDAHO NATIONAL ENGINEERING LABORATORY

PARTIES	STATUTE/TYPE OF NOTICE	FINE/PENALTY ASSESSED	AMOUNT PAID	FINE/PENALTY STATUS	DATE
DOE/ID	Idaho Clean Air/ Notice of Violation	10,000	10,000	PAID	06/05/91

BROOKHAVEN NATIONAL LABORATORY

PARTIES	STATUTE/TYPE OF NOTICE	FINE/PENALTY ASSESSED	AMOUNT PAID	FINE/PENALTY STATUS	DATE
DOE/Contractor/ EPA Region 2	TSCA/ Notice of Non-compliance	682,623	TBD	Negotiations ongoing	06/28/91
DOE/Contractor/ EPA Region 2	RCRA/ Notice of Non-compliance	71,250	TBD	Negotiations ongoing. Fine is a subset of the 06/28/91 violation above	06/28/91

PADUCAH GASEOUS DIFFUSION PLANT

PARTIES	STATUTE/TYPE OF NOTICE	FINE/PENALTY ASSESSED	AMOUNT PAID	FINE/PENALTY STATUS	DATE
DOE/Contractor/KY	RCRA Mixed Waste/ Notice of Violation	5,000	5,000	PAID	01/12/94

FINES AND PENALTIES AND OTHER MONETARY ASSESSMENTS AGAINST DOE AND/OR DOE CONTRACTORS

PORTSMOUTH GASEOUS DIFFUSION PLANT

PARTIES	STATUTE/TYPE OF NOTICE	FINE/PENALTY ASSESSED	AMOUNT PAID	FINE/PENALTY STATUS	DATE
Contractor/OH	Ohio Clean Water Act/Order	3,372	3,372	PAID	04/10/84
Contractor/EPA HQ *	TSCA/ Administrative Complaint	132,000	132,000	PAID	10/03/90
DOE/Contractor/OH	RCRA/ Notice of Violation	TBD	TBD	Negotiations ongoing	10/26/92
DOE/ EPA Region 5	RCRA/ Notice of Violation	50,000	50,000	Monetary payment under settlement agreement resolving dispute concerning RFI workplan. Funds requested in FY 95 budget to pay penalty and for environmentally beneficial project valued at 1 million.	12/14/92

* Includes Portsmouth, Paducah and K-25 gaseous diffusion plants

FINES AND PENALTIES AND OTHER MONETARY ASSESSMENTS AGAINST DOE AND/OR DOE CONTRACTORS

SANTA SUSANA FIELD LABORATORY/ENERGY TECHNOLOGY ENGINEERING CENTER

PARTIES	STATUTE/TYPE OF NOTICE	FINE/PENALTY ASSESSED	AMOUNT PAID	FINE/PENALTY STATUS	DATE
Contractor/CA	California Haz. Waste Law/ Settlement agreement	TBD	TBD	Negotiations ongoing	11/27/90

TONANPAH TEST RANGE

PARTIES	STATUTE/TYPE OF NOTICE	FINE/PENALTY ASSESSED	AMOUNT PAID	FINE/PENALTY STATUS	DATE
Contractor/NV	CWA/ Order	15,000	15,000	PAID	12/02/88

KANSAS CITY PLANT

PARTIES	STATUTE/TYPE OF NOTICE	FINE/PENALTY ASSESSED	AMOUNT PAID	FINE/PENALTY STATUS	DATE
DOE/MO	Kansas City Air Control Code/ Notice of Violation	500	500	PAID	01/24/92

FINES AND PENALTIES AND OTHER MONETARY ASSESSMENTS AGAINST DOE AND/OR DOE CONTRACTORS

FERNALD

PARTIES	STATUTE/TYPE OF NOTICE	FINE/PENALTY ASSESSED	AMOUNT PAID	FINE/PENALTY STATUS	DATE
Contractor/EPA Region 5	TSCA/ Administrative Complaint	5,000	5,000	PAID	03/12/85
DOE/Contractor/OH	RCRA, CERCLA, CWA/ Consent Decree	80,000	80,000	Payment of litigation costs by DOJ	12/02/88
			335,000	Payment for past response costs	
			275,000	Payment by Contractor	
			250,000	Payment by Contractor	
				Supreme Court ruLed on 4/21/92 the Government was not subject to fines and penalties under RCRA/CWA	

FINES AND PENALTIES AND OTHER MONETARY ASSESSMENTS AGAINST DOE AND/OR DOE CONTRACTORS

FERNALD continued

PARTIES	STATUTE/TYPE OF NOTICE	FINE/PENALTY ASSESSED	AMOUNT PAID	FINE/PENALTY STATUS	DATE
DOE/OH	CAA/ Consent Decree		60,000	Paid by Contractor	12/06/88
			61,200	Paid by DOE	
			6,879	Payment of litigation costs by DOJ	
Contractor/ EPA Region 5	RCRA/ Order	196,500	TBD	Negotiations ongoing	02/09/89
DOE/ EPA Region 5	CERCLA IAG/ Stipulated penalty	100,000	100,00	Assessment amount agreed to by DOE through the dispute resolution process. DOE also agreed to conduct environmentally beneficial projects totally 500,000 near the plant. Also Settles the two violations listed below.	12/04/90
DOE/ EPA Region 5	CERCLA IAG/ Stipulated penalty	100,000	See above	See above	12/07/90
DOE/ EPA Region 5	CERCLA IAG/ Stipulated penalty	100,000	See above	See above	12/21/90

FINES AND PENALTIES AND OTHER MONETARY ASSESSMENTS AGAINST DOE AND/OR DOE CONTRACTORS
FERNALD continued

PARTIES	STATUTE/TYPE OF NOTICE	FINE/PENALTY ASSESSED	AMOUNT PAID	FINE/PENALTY STATUS	DATE
DOE/ EPA Region 5	CERCLA IAG/ Stipulated penalty	50,000	TBD	DOE agreed to conduct an environmental project totally 2 million and 25,000 in contingent penalty if new milestone date is missed. DOE requested 50,000 in FY 95 budget request to pay penalty.	02/09/93

FINES AND PENALTIES AND OTHER MONETARY ASSESSMENTS AGAINST DOE AND/OR DOE CONTRACTORS

SAVANNAH RIVER SITE

PARTIES	STATUTE/TYPE OF NOTICE	FINE/PENALTY ASSESSED	AMOUNT PAID	FINE/PENALTY STATUS	DATE
DOE/SC	Safe Drinking Water Act/ Consent Order	500	500	PAID	06/12/85
DOE/SC	RCRA;SC Pollution Control Act/ Consent Order	12,000	12,000	PAID	07/19/85
DOE/SC	RCRA/ Consent Order	25,000	25,000	PAID	11/07/85
DOE/SC	SC Pollution Control Act/ Settlement	50,000	50,000	PAID	06/20/86
DOE/SC	RCRA/ Settlement	20,000	20,000	PAID	10/06/86
DOE/SC	SC Pollution Control Act/ Settlement	22,000	22,000	PAID	10/06/86
DOE/SC	RCRA/ Settlement	4,500	4,500	PAID	05/01/87
DOE/SC	SC Pollution Control Act/ Settlement	4,500	4,500	PAID	09/09/87

FINES AND PENALTIES AND OTHER MONETARY ASSESSMENTS AGAINST DOE AND/OR DOE CONTRACTORS

SAVANNAH RIVER SITE continued

PARTIES	STATUTE/TYPE OF NOTICE	FINE/PENALTY ASSESSED	AMOUNT PAID	FINE/PENALTY STATUS	DATE
DOE/SC	Safe Drinking Water Act/ Settlement	5,000	5,000	PAID	09/11/87
DOE/SC	Safe Drinking Water Act/ Settlement	2,000	2,000	PAID	10/08/87
DOE/SC	RCRA; SC and NRDC Litigation/ Consent Decree	90,000	90,000	Payment of litigation costs by DOJ	05/26/88

OVERSIGHT AND COMPLIANCE FUNDING

Mr. Myers. Provide a list of funds provided to each state for any type of monitoring, oversight, compliance activities, or impact assistance in fiscal years 1994, 1995, and 1996.

Mr. Grumbly. A summary of the Department's funding estimates for state monitoring, oversight, compliance activities, and impact assistance activities is provided in the attached tables. The tables also include the Department's funding estimates for tribal activities covering these concerns. The tables represent funding summaries for state impact assistance including: (1) transportation planning related to the Department's shipment of hazardous and radioactive materials; (2) the Rocky Flats surface water management project providing additional protection to surface waters from potentially contaminated run-off from the Rocky Flats Plant; (3) the Western Governor's Association activities coordinating states activities associated with the Department's Waste Isolation Pilot Plant (WIPP) and funding provided to tribes for WIPP concerns. The tables include funding summaries for state support and planning for compliance activities including: (1) technical document review for Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) activities; and (2) state resource funding for the Federal Facility Compliance Act planning provided through the National Governor's Association. Tables attached also include funding summaries for oversight, monitoring, and public participation activities by states through the Department's Agreement-in-Principle program, through a series of oversight and monitoring grants for the Hanford site, and a public participation grant for the State of Oregon. Summary funding charts of oversight, monitoring, and public participation grants to tribes are also listed in the summary tables. Funding estimates do not reflect the actual rate of state and tribal expenditures for program activities.

OFFICE OF ENVIRONMENTAL MANAGEMENT (EM)
FUNDING ESTIMATES FOR TRANSPORTATION PLANNING
TO HAZARDOUS/RADIOACTIVE MATERIAL SHIPMENT
AND WATER MANAGEMENT PROJECTS *

ORGANIZATION	FY 94	FY 95	FY 96
URBAN ENERGY TRANSPORTATION CORP.[3]	263,000	300,000	300,000
TRANSPORTATION EMERGENCY PREPAREDNESS EXTERNAL COORDINATION GROUP [3]	400,000	400,000	400,000
LOW LEVEL WASTE FORUM [1]	660,000	660,000	660,000
ROCKY FLATS SURFACE WATER MANAGEMENT [2]	13,338,000	17,361,000	0

* Funding provided through EM Organizations is represented by:
#1 Office of Waste Management; #2 Office of Environmental Restoration;
#3 Office of Technology Transfer.

OFFICE OF ENVIRONMENTAL MANAGEMENT (EM)
SUMMARY OF FUNDING ESTIMATES
FOR STATE/TRIBAL WORKING-GROUP, STAKEHOLDERS FORUM, AND INDIAN TRIBES *

SITE	FY 94	FY 95	FY 96
STATE/TRIBAL WORKING GROUP AND STAKE HOLDERS FORUM [1]	2,190,000	1,575,000	1,654,000
UMATILLA INDIAN TRIBE/HANFORD-EM PLANNING **	545,000	652,000	667,000
SHOSHONE-BANNOCK INDIAN TRIBES/INEL-EM PLANNING [2]	300,000	300,000	309,000
YAKIMA/HANFORD-EM PLANNING **	923,000	869,000	889,000
NEZPERCE/HANFORD-EM PLANNING [3]	637,000	435,000	445,000
SANTA CLARA PUEBLO [1]	450,000	400,000	400,000

* Funding provided through EM Organizations is represented by:
FY 94 funds are from #1 Office of Planning and Resource Management;
FY 95-96 Funding will be provided by the Office of Public Accountability;
#2 Office of Environmental Restoration and #3 the Office of Nuclear Materials and Facilities Stabilization.

** FY 94 funding represents 20% of tribal funding by Office of Environmental Restoration; 80% funding provided by the Office of Nuclear Materials and Facilities Stabilization.
FY 95-96 funding will be provided by the Office of Public Accountability.

OFFICE OF ENVIRONMENTAL MANAGEMENT (EM)
SUMMARY OF CERCLA INTERAGENCY AGREEMENT FUNDING ESTIMATES FOR OVERSIGHT OF SITE CLEANUP *

SITE/STATE	FY 94	FY 95	FY 96
OAK RIDGE RESERVATION/TENNESSEE	1,181,518	1,228,779	1,277,930
IDAHO NATIONAL ENGINEERING LABORATORY/IDAHO	1,583,000	1,300,000	1,633,000
HANFORD/WASHINGTON	3,020,000	2,700,000	2,700,000
FERNALD/OHIO	1,000,000	2,000,000	2,000,000
MOUND PLANT/OHIO	1,010,000	1,131,000	1,187,000
ROCKY FLATS PROJECT/COLORADO	500,000	500,000	500,000
NEVADA TEST SITE/NEVADA **	0	100,000	600,000
LAWRENCE LIVERMORE NATIONAL LAB MAIN SITE/CALIFORNIA	102,000	315,000	315,000
LAWRENCE LIVERMORE NATIONAL LAB SITE 300/CALIFORNIA	98,000	310,000	310,000
SAVANNAH RIVER SITE/SOUTH CAROLINA	1,152,000	1,495,000	1,495,000
BROOKHAVEN NATIONAL LAB/NEW YORK	150,000	230,000	300,000
WELDON SPRING/MISSOURI	500,000	500,000	500,000
MONTICELLO MILL SITE/UTAH	202,000	45,000	150,000

* Funding provided through the Office of Environmental Restoration.

** Agreement under negotiation; costs represent estimated multi-year projections.

OFFICE OF ENVIRONMENTAL MANAGEMENT (EM) SUMMARY OF AGREEMENTS IN PRINCIPLE FUNDING ESTIMATES *

SITE	FY 94	FY 95	FY 96
CALIFORNIA [1]	2,000,000	2,000,000	2,000,000
COLORADO [1]	2,825 000	2,845,000	2,205,000
FLORIDA [2]	91,000	91,000	100,000
IDAHO [1]	3,670,000	2,960,000	1,960,000
KENTUCKY [2]	2,437,000	1,739,000	1,835,000
MISSISSIPPI [2]	150,000	150,000	150,000
MISSOURI [2]	200,000	200,000	300,000
NEW MEXICO [1]	3,396,000	2,535,000	2,000,000
NEVADA [2]	1,087,000	1,328,000	1,328,000
OHIO (MOUND) [2]	720,000	879,000	868,000
OHIO (PORTSMOUTH) [2]	942,000	680,000	718,000
TOTAL OHIO [2]	(1,662,000)	(1,559,000)	(1,576,000)
SOUTH CAROLINA [2]	1,376,000	1,987,000	1,993,000
TENNESSEE [2]	3,943,482	3,951,221	3,902,070
TEXAS [2]	491,000	990,000	1,000,000
GEORGIA [2]	731,000	523,000	574,000
ALASKA [2]	150,000	150,000	150,000

* Funding provided through EM Organizations is represented by:
#1 Office of Waste Management; or #2 Office of Environmental Restoration.

OFFICE OF ENVIRONMENTAL MANAGEMENT (EM)
SUMMARY OF FUNDING ESTIMATES FOR THE WASTE ISOLATION PILOT PLANT AND RELATED ACTIVITIES *

GROUP	FY 94	FY 95	FY 96
WESTERN GOVERNORS ASSOCIATION (WGA) 5YR TOTAL	2,000,000	2,000,000	2,000,000
WGA ***	185,000	235,000	235,000
COLORADO	215,000	215,000	215,000
IDAHO	290,000	290,000	290,000
NEW MEXICO	305,000	305,000	305,000
UTAH	175,000	175,000	175,000
WYOMING	175,000	175,000	175,000
CALIFORNIA	175,000	175,000	175,000
ARIZONA	75,000	75,000	75,000
NEVADA	105,000	105,000	105,000
WASHINGTON	175,000	175,000	175,000
OREGON	175,000	175,000	175,000
SOUTHERN STATES ENERGY BOARD	130,000	115,000	111,000
WIPP COOPERATIVE AGREEMENT		250,000	
CARLSBAD ENVIRONMENTAL MONITORING AND RESEARCH CENTER	5,430,000	2,500,000	3,500,000
NEW MEXICO STATE ASSISTANCE**	0	0	0
UMATILLA INDIAN TRIBE	20,000	20,000	25,000
SHOSHONE-BANNOCK (INDIAN) TRIBES	610,000	650,000	127,000

* Funding provided through the Office of Waste Management.

** Funding to be provided upon land withdrawal and initiation of Test Phase.

*** WGA FY 94-96 represents mixed funding provided by the Offices of Waste Management and Facility Transition.

OFFICE OF ENVIRONMENTAL MANAGEMENT (EM)
SUMMARY OF STATE RESOURCE FUNDING ESTIMATES FOR THE NATIONAL GOVERNOR'S ASSOCIATION (NGA) AGREEMENT*
(For FFCAct Support Planning)

GROUP	FY 94	FY 95	FY 96
NGA **	860,000	1,070,000	1,070,000

GROUP	FY 94	FY 95	FY 96
NGA/STATES	800,000	1,800,000	0

* Funding is provided through the Office of Waste Management.

** Cooperative agreement between DOE and the NGA provides funding primarily to the NGA to facilitate FFCAct support planning with States, EPA and DOE.

OFFICE OF ENVIRONMENTAL MANAGEMENT (EM)
FUNDING ESTIMATES FOR THE STATE OF WASHINGTON
OVERSIGHT, EMERGENCY PLANNING AND INFORMATION NETWORK ACTIVITIES *

Washington**	FY 94	FY 95	FY 96
Emergency Management	630,000	643,000	655,000
Environmental Monitoring	553,000	564,000	574,000
Health Information Network***	3,151,000	2,500,000	0

* Funding is provided through the Office of Facility Transition.
** Activities are in addition to CERCLA monitoring activities.

FUNDING ESTIMATES FOR THE STATE OF OREGON
PUBLIC PARTICIPATION ACTIVITIES *

Oregon	FY 94	FY 95	FY 96
Public Participation	421,000	543,000	555,000

* Funding is provided through the Office of Facility Transition.

FY 1996 CONSTRUCTION EFFORTS

Mr. Myers. Identify all fiscal year 1996 new construction projects which are needed to meet legal requirements and identify the legal basis for each.

Mr. Grumbly. The Office of Environmental Management is proposing five new construction starts for fiscal year 1996 which are needed to meet legal requirements. Four of these are in the Waste Management Program and one is in the Nuclear Materials and Facilities Stabilization program.

For the record these projects are:

($ in Thousands)

Project Number	Title	Legal Requirement	TPC	FY 1996 Request
WASTE MANAGEMENT				
96-D-401	Comprehensive Treatment and Management Plan Immobilization of Miscellaneous Wastes, Rocky Flats	Land Disposal Restriction Federal Facility Compliance Agreement I & II.	$15,100	$1,400
96-D-402	Comprehensive Treatment and Management Plan Building 374/774 Sludge Immobilization Rocky Flats	Land Disposal Restriction/Federal Facility Compliance Agreement II (Previous Federal Facility Compliance Agreement I & II	22,900	1,500
96-D-405	T-Plant Secondary Containment and Leak Detection Upgrades, Richland	Washington State and Federal Environmental Regulations for secondary containment and leak detection capability, and will lead to accomplishment of the Hanford Federal Facility Agreement and Consent Order Milestone M-32-03, "Complete T-Plant Tank Actions."	22,560	2,100
96-D-406	K-Basins Operations Program, Richland;	Washington State and Federal drinking water standards, National Electric Code and Fire Protection Compliance, and the Hanford Federal Facility Agreement and Consent Order Milestone M-34 series, which requires removal of fuel, sludge, and water from the K-Basins.	TBD	26,000
NUCLEAR MATERIALS AND FACILITIES STABILIZATION				
96-D-471	CFC HVAC/Chiller Retrofit, Savannah River Site, Aiken, South Carolina.	Enforcement of the EPA Stratospheric Ozone Protection Regulations, authorized by Title VI of the Clean Air Act.	58,500	1,500

PRIVATIZATION EFFORTS

Mr. Myers. Please describe any privatization efforts which are being considered by the program.

Mr. Grumbly. Environmental Management has a number of privatization projects underway at various field offices. These projects involve site support type activities such as laundries, as well as clean up projects for soils, mixed waste, liquid radioactive waste, etc. A list of examples is attached showing the project and sponsoring field office. As can be seen on the attachment, significant cost savings were realized or are projected to be realized using privatization. In addition to those on the list, the Department is in the final stages of assessing the feasibility of privatizing a significant portion of the Hanford tank waste treatment program. Overall, privatization has been demonstrated as a cost-effective way to get certain types of projects or activities done. EM is now in the process of significantly expanding its privatization efforts where it can be demonstrated to be cost effective to do so.

STRATEGIC GOALS

Mr. Myers. Last year for the record you provided a list of significant actions to be completed at each site in fiscal year 1994 and 1995. Briefly compare the actual results to last year's proposed list.

Mr. Grumbly. The list of commitments provided was extensive and wide-ranging. I would like to point out that some of the projects described were, more or less, study types of activities required by law. While on the other end of the spectrum we outlined major remedial actions and urgent risk reduction activities such as decontamination and decommissioning of entire buildings and consolidation and stabilization of plutonium inventories.

I am pleased to report that the Environmental Management program fulfilled over 80 percent of the entire list of planned projects as provided for the record last year. In addition, when you look at those projects that are more purely "cleanup" -- work we're doing on the ground, actually turning earth -- our score goes up closer to 90 percent.

Furthermore, those projects not fully completed are, in general, ongoing but have experienced scheduling delays for one reason or another. For example, our plans to conduct a radioactive waste vitrification demonstration at our Oak Ridge site has been delayed since no industrial partner was found. However, an alternative path was initiated to conduct pilot-scale tests in time for a December, 1995 demonstration of a full-scale, transportable vitrification system.

For your further information, I would like to submit a chart for the record that shows our progress our program's six strategic goals. This will provide an overview based on selected commitments. This chart is not as comprehensive or detailed as the submission for the record on which the above information is based.

Environmental Management Strategic Goals and Commitments for 1994

Goal 1: Urgent Risks and Threats	Goal 2: Provide a Safe Workplace	Goal 3: Under Control Managerially and Financially	Goal 4: Be More Outcome Oriented	Goal 5: Technology Development Program	Goal 6: Strong Partnerships with Stakeholders
◐ Reduce urgent risks in: – Hanford Tanks – Spent Nuclear Fuel – Fissile Materials ◐ Identify all Urgent Risks and Threats at Existing Facilities ● Identify all Urgent Risks and Threats at Potential Surplus Facilities ● Issue the Complex-wide Spent Nuclear Fuel Strategic Plan	● Develop Worker Safety and Health Performance Measures ● Define Parameters to Characterize Safety and Health Performance ● Develop a Strategy for Sensitizing Workforce to Inherent Hazards ● Safety and Health Training Needs Assessment ● Develop Strategy for Enforcing Occupational Safety and Health Requirements	● Define Deputy Assistant Secretary Roles +● Complete Roles and Responsibilities Draft Report ● Issue Environmental Management Budget Procedures ● Reduce Uncosted Obligations $300 Million ● Increase Authorization of Staff by 1200 ● Change Management and Operating Contract Structure at Idaho ◐ Reduce Cost of HQ Support Service Contracts by 20 Percent ● Contract Reform Measures for Management and Operating Contracts △ Establish Working Group to Assess Management Control Systems ● Change Management and Operating Contract Structure at Fernald ● Expand Employee Incentive and Awards Activities ● Establish Survey System for Employee Job Satisfaction ◐ Expand Team Building and Rotational Assignments	◐ Implement Process to Transfer More Than 45 Percent of Hanford Site ● Draft Resource Document for Land Use Plans ● Initiate Four Pilot Projects with EPA +● Complete 29 Interim Remediation Accomplishments +● Complete 8 Remedial Action Projects ◐ Complete 80 Assessments ● Develop Facility Transfer Procedures ● Complete initial receipt of foreign fuel	● Implement New Technology Development Management Approach ◐ Technology Development Show Dollar for Dollar Leveraging ● Make Available for Transfer 24 Technologies to Private Sector	● Design and Implement Public Involvement Process ● DOE Annual Report ● Regular Stakeholder Communication Channels ● Establish Stakeholder Involvement Performance Standards ● Policy for Sharing Budget Information With Stakeholders △ Summit Meeting ◐ Informal Congressional Forum Process

Summary

●	30	Met or exceeded expectations (75%)
◐	8	Partially completed (20%)
△	2	Goals altered (5%)

LAND USE PLANNING

Mr. Myers. Your statement does not discuss land use planning to determine cleanup strategy. What is the status of this effort?

Mr. Grumbly: To ensure that its cleanup efforts reflect the surrounding communities' interests in future land use, DOE initiated the "Future Use" project in December 1994. This planning initiative invites stakeholders to work with DOE to define preferred future uses for the lands and facilities that currently constitute DOE's sites.

DOE is working with EPA, state, tribal, and local governments, environmental groups, the business community, and individual citizens to identify appropriate and preferred future uses. The stakeholders are asked to consider constraints such as geography, ongoing DOE activities, topography, and other factors when defining future use recommendations.

At most, if not all EM sites, DOE's site specific advisory boards, which are comprised of diverse stakeholders, are taking the lead in formulating recommendations on future uses. At other sites, DOE is using focus groups, public meetings, individual meetings, and other mechanisms to formulate preferred uses.

As part of this process, several sites are undertaking ecological surveys or studies to identify regions with rich ecosystems. Because large portions of many DOE's sites have remained undisturbed by humans for over 50 years, rare habitats have been preserved or cultivated at some sites.

The sites are also working with Native American governments to ensure that cultural, religious, and ceremonial resources are preserved. Thousands of archeological sites, including rock paintings, have been found on DOE sites. These artifacts must be factored into land use recommendations and ultimately into remedial decisions.

DOE intends to use these stakeholder-preferred future use recommendations as a guide in working with its regulators -- EPA and the states -- to identify appropriate remedial methods. Furthermore, the Superfund law should be amended to provide for flexibility based on future use, we would recommend that this be statutorily instituted to be applied more universally. The Administration supported legislative changes to superfund during the last Congress and will do so again this year.

The Hanford site took the lead in defining appropriate, preferred future land use options. DOE, Hanford, EPA and the States of Washington and Oregon organized the Hanford Future Site Uses Working Group to define future use options. While the Working Group did not reach consensus on preferred land uses, the Group did define underlying principles to guide cleanup efforts. For example, DOE-Hanford is looking to this report as a factor in making remedial decisions.

Other DOE sites, including Fernald and Mound, have progressed in formulating recommendations that will guide future cleanup efforts. DOE's major sites are scheduled to formulate land use recommendations with significant public input by December 1995. In instances where consensus cannot be reached, DOE will work with EPA, the States, tribes and affected stakeholders to consider land use options and in making cleanup decisions.

PROJECT MANAGEMENT COSTS

Mr. Myers. What success have you had in reducing the high project management costs associated with construction projects?

Mr. Grumbly. In a detailed study performed for the Department in November 1993, the average administration costs -- or project management costs -- for environmental restoration and waste management projects were estimated to total approximately 23% of total project costs. Such project management costs were defined in the study as the management costs charged to a project by the Department's management and operating contractors and onsite architectural and engineering contractors, and included costs for supervision and inspection, salaries and wages, non-construction supplies, and training.

The Department currently is working with its contractors to review project management costs and identify areas where these costs should be reduced. We are reviewing our contracts to ensure that:

o Project support/overhead, such as directly assigned staff, information management, maintenance, engineering, security, G&A, utilities, etc., are evaluated to benchmark existing practices and performance standards, and to identify areas where productivity/efficiency gains and cost savings may be achieved.

o Project support/overhead best practices and performance standards from DOE, other Governmental agencies, and industry are reviewed for applicability and implemented where appropriate.

o Cost effective approaches to providing services (such as user pay versus funds allocation, make versus buy, value engineering, lease versus purchase, etc.) are appropriately implemented, and unnecessary and redundant activities and services are eliminated.

o Contracts have productivity/efficiency performance measures with quantitative performance standards and positive and negative incentives for contractors.

o In the event of unsatisfactory contractor performance, contracting alternatives, which could include the use of other Governmental agencies, are established so that EM can acquire the most cost effective services.

o Prime contractors clearly establish technical objectives, cost and schedule objectives, and accountability that extend down through all subcontract tiers.

o Contracts undergo periodic reviews to ensure that the performance measures and criteria are consistent with current best practices.

One example of where we have implemented contract reform is the consolidation of contracts and subsequent project management at the Idaho National Engineering

STAFFING LEVELS

Mr. Myers. The Department was provided 1,600 additional FTEs in this program to provide contractor oversight and management. Additional personnel have been provided to your headquarters' office as well as other headquarter's organizations such as congressional affairs, public affairs, and policy. Since "contract oversight and management" is done by the field offices, why have these slots been allocated to headquarters.

Mr. Grumbly. Of the 1,600 positions, 350 were allocated to DOE Headquarters. Over 100 of these positions went to organizations closely aligned with or directly supporting the mission of Environmental Management , such as Environment, Safety & Health and Office of General Counsel. It is true that the contractor oversight and management of the Department's largest contractors is performed at our field sites; however, it is important to have Headquarters program management to manage budgets, monitor field activities, respond to Congressional inquiries, provide training, policy guidance and limited oversight to ensure that policies are consistently developed and implemented by the Department's field organizations. The minimal allocation (6%) of resources to other Headquarters organizations will enable Environmental Management to more expeditiously fulfill its responsibilities in several key areas, such as Environment, Safety and Health, Facility Management and human resources.

WASTE MANAGEMENT

Mr. Myers. The Waste Management program is the largest piece of this budget. Are there any options for reducing the cost of this program?

Mr. Grumbly. We are considering a number of ways to reduce waste management costs.

We are reducing the basic cost of doing business through reductions in infrastructure, overhead and support costs. We are applying state-of-the-art cost management techniques, including activity based costing/management, benchmarking, performance metrics and improving front-end construction project definition. We are also increasing the use of commercial capability to treat and dispose of waste. We are pursuing "privatization", where a commercial contractor would build and operate waste treatment facilities and the government would pay for the service. We are also looking at using larger contracts for services involving multiple sites and the use of specialty contractors to operate systems on our sites like waste water treatment.

These actions and others for cost reduction will not get us as far as we need to go. So, we must consider a more phased approach to waste treatment as opposed to building many facilities at many sites all at once. The details are far from being worked out and it would take significant stakeholder involvement, but the idea is to work on the most important problems at each site in a phased approach. This would help focus our resources both, dollars and people, on the most important problems first.

FOREIGN RESEARCH REACTOR FUEL

Mr. Myers. What is the status of the Department's acceptance of foreign research reactor fuel?

Mr. Grumbly. The Department completed the *Environmental Assessment of Urgent-Relief Acceptance of Foreign Research Reactor Spent Nuclear Fuel* and released it with a Finding of No Significant Impact on April 22, 1994. This Environmental Assessment addressed the proposed acceptance of a limited amount of foreign research reactor spent fuel to ensure the continued cooperation of the foreign research reactor operators with United States nuclear weapons nonproliferation programs until a full Environmental Impact Statement could be completed and decisions made on whether to implement a new foreign research reactor spent fuel acceptance program. Subsequent to release of the Urgent-Relief Environmental Assessment, the Department began an initial shipment of 153 spent fuel elements from four European countries to the Department's Savannah River Site. After the ships carrying this shipment set out for the United States, the State of South Carolina filed suit in the U.S. District Court in South Carolina in an attempt to block the shipment. Although the District Court issued a Preliminary Injunction stopping the shipment, the 4th Circuit Court of Appeals subsequently overruled the District Court's decision, and the shipment was completed in September 1994. Prior to the planned second shipment of an additional 132 spent fuel elements, the District Court issued a permanent injunction barring further acceptance of spent fuel under the Urgent-Relief Environmental Assessment. This ruling of the District Court has also been appealed to the 4th Circuit Court. Further urgent-relief shipments are on hold pending the outcome of this appeal.

In the meantime, the Department is proceeding with preparation of the *Environmental Impact Statement on a Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel.* This Environmental Impact Statement is scheduled to be released for public review and comment in April 1995. Completion of the final Environmental Impact Statement is scheduled by the end of September 1995. The Department plans to issue a Record of Decision prior to the end of December 1995.

Mr. Myers. How much are you planning to spend to take back fuel from foreign research reactors?

Mr. Grumbly. For the first Urgent-Relief shipment, the Department spent about $740,000 to support the spent fuel transportation activities within the United States. We may have to pay about an additional $32,000 due to delays associated with the legal challenge to the first shipment. The cost of managing the spent fuel in the near-term, after its receipt by the Department, is covered by the fee we charged the reactor operators.

The Department estimates that we will have to spend approximately the same amount for the second Urgent-Relief shipment.

Additional costs will be incurred in the future when the Department is able to finally dispose of the spent fuel. However, due to the numerous uncertainties involved with the timing and method of the ultimate disposition of the spent fuel, we are unable at this time to meaningfully estimate what the disposal costs will be. However, they will be a small fraction of the amount the Department was already committed to pay for disposal of the much greater amount of spent fuel which we already had in storage.

Concerning possible future foreign research reactor management activities that might be conducted under the Environmental Impact Statement, it is important to note that no decision has been made at this time to implement any foreign research reactor spent fuel management activities past those discussed in the Urgent-Relief Environmental Assessment. In addition, the *Environmental Impact Statement on a Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel* is considering several alternatives, some that would include activities outside the United States which might not be completely funded by the United States. Finally, the costs of potential future U.S. activities would also be offset, partially or completely, by the fees that the Department would charge for services rendered. However, the amount of offset would be dependent on the value of the fee, a parameter which will have to be negotiated with the reactor operators if we decide to implement a new foreign research reactor spent fuel management policy. The draft Environmental Impact Statement, which will contain cost estimates for the alternatives, will be issued this Spring.

WASTE MANAGEMENT

Mr. Myers. Why should this be part of your program?

Mr. Grumbly. All of the foreign research reactor spent nuclear fuel covered by this proposed program contains uranium enriched in the United States. Much of this uranium is highly enriched uranium that could be used to produce simple nuclear weapons. Between 1958 and 1988, the U.S. established and conducted a policy under which we accepted such spent fuel.

The United States has also been conducting a program since 1978 to encourage and assist the foreign research reactors to convert from use of highly enriched uranium fuel to low enriched uranium (the Reduced Enrichment for Research and Test Reactors program). This is part of a broader United States nuclear weapons nonproliferation policy calling for the reduction and eventual elimination of the use of highly enriched uranium in civil programs worldwide.

Past assistance from the United States in the storage of their spent fuel has been a major incentive for the foreign research reactor operators to switch from highly enriched uranium fuel to low enriched uranium fuel. Many of the major reactor operators are insisting that a renewal of such a policy is required to ensure their continued cooperation. Acceptance or other appropriate approaches for management of the spent fuel would also serve to ensure that the highly enriched uranium in the spent fuel accepted could not be diverted into a nuclear weapons production program.

The evaluation of whether to implement a new foreign research reactor spent fuel management program is part of the Environmental Management program in particular because most of the facilities being considered for use in such a program are under Environmental Management cognizance within the Department of Energy. Although the aim of this program is to support U.S. nuclear nonproliferation goals, the Nuclear Nonproliferation Office of the Department functions as a policy "staff" support while Environmental management performs "line" management responsibilities.

LOW-LEVEL WASTE DISPOSAL STANDARDS

Mr. Myers. Why don't DOE facilities meet commercial standards for low-level waste disposal? It is hard to believe that it would cost more money for DOE to meet commercial standards rather than their own standards when everything else DOE does seems to cost more than comparable commercial facilities.

Mr. Grumbly. The standards established for the regulation of commercial low-level waste disposal are not legally applicable to the Department of Energy, so compliance with the standards is selective. The Energy Reorganization Act of 1974 separated the functions of the Department of Energy (the Energy Research and Development Administration at the time) and the Nuclear Regulatory Commission. The Nuclear Regulatory Commission was assigned the responsibility to regulate the commercial application of nuclear materials. The Department of Energy was assigned the responsibility to "provide for the safe storage, processing, transportation, and disposal of" radioactive waste resulting from nuclear materials and weapons production.

In the mid-1980s, the Department recognized the merits of the 1982 regulation promulgated by the Nuclear Regulatory Commission for low-level waste disposal. In proceeding with the update of its Order, "Radioactive Waste Management," DOE considered the NRC regulation, but recognized some key differences between the situation DOE was controlling and that being regulated by the NRC. The NRC waste classification system was based on commercial waste stream characteristics which differ significantly from waste streams resulting from nuclear research and weapons production. Another key element of the NRC regulation is site selection. Because the Department already has existing sites for waste disposal, DOE did not place as much emphasis on site selection. In revising the Order, DOE adopted some of the requirements of the NRC regulation. The most important of these was the application of radiological performance objectives and the requirement for an assessment demonstrating compliance with the objectives. The NRC reviewed the DOE Order, which was issued in 1988, and found it to be comparable, though not the same as the NRC regulation.

The Department is now reexamining whether adoption of appropriately modified commercial disposal standards would result in a less expensive DOE low-level waste management system. Although the cost for waste disposal varies depending on the characteristics of the waste, preliminary data indicate that the unit cost for disposal of waste by DOE appears to be nominally the same as that for a commercial facility.

For example, following are the unit costs for disposal at some DOE and commercial facilities:

DOE Costs		**Commercial Costs**	
DOE Hanford	$\$36\text{-}65/\text{ft}^3$	US Ecology (WA)	$\$37/\text{ft}^3$
DOE Nevada	$\sim\$11/\text{ft}^3$	Envirocare (UT)	$\$8\text{-}30/\text{ft}^3$
DOE Savannah River	$\$49/\text{ft}^3$	Barnwell (SC)	$\$152/\text{ft}^3$

The Defense Nuclear Facilities Safety Board issued Recommendation 94-2, "Conformance with Safety Standards at DOE Low-Level Nuclear Waste and Disposal Sites" on September 8, 1994. The Board recommended that DOE issue additional requirements, standards, and guidance for low-level waste management. The Department has accepted the recommendation and is working on a plan which will include the evaluation of commercial and international standards to determine their utility for the DOE system.

DEFENSE WASTE PROCESSING FACILITY

Mr. Myers. Describe any outstanding technical issues to be resolved before DWPF startup.

Mr. Grumbly: At this point we are not aware of any significant technical issues requiring resolution prior to DWPF startup. The startup testing program is nearly complete, although several important tests remain. These tests will demonstrate the ability of DWPF to produce an acceptable glass waste form from the range of waste characteristics expected to be delivered to DWPF from the Savannah River Site high-level waste tank farms. Some technical issues may be identified during these last tests, specifically those tests in which elemental mercury, and noble metals are added. These two constituents will be present in the actual radioactive waste streams.

Additionally, a facility that must pretreat one of the two streams prior to vitrification, is currently under construction. Startup testing of this facility will begin later this calendar year. This process has only been tested at a small scale and technical issues stemming from startup testing may be identified, although none are expected at this time.

HANFORD WASTE TANK

Mr. Myers. Please describe the Hanford high-level waste tank safety issues and the status of needed improvements.

Mr. Grumbly. The status of the highest priority safety issues and needed improvements are:

> Flammable Gases: This issue was declared an Unreviewed Safety Question (USQ) for 20 tanks in 1990; 26 tanks are currently on the Watch List for this issue. The tank of most concern was Tank 101-SY. In July 1993, Hanford initiated in-tank testing of pump mixing for Tank 101-SY as a potential measure to eliminate the periodic release of flammable gases. The mixer pump has proven successful to date; no gas releases have occurred since June 1993 that have resulted in flammable gas concentrations above the lower flammability limit. It is necessary to complete instrumentation and characterization of the remaining Watch List tanks in this category in order to determine requirements for mitigation, if needed.
>
> Ferrocyanide: This issue was declared a USQ for 24 tanks in 1990. Based on sampling and historical data, 4 tanks were removed from the Watch List in 1993. Of the 20 remaining tanks, 16 contain low ferrocyanide levels; 2 of these tanks were removed from the Watch List in 1994. The remaining 4 tanks contain higher ferrocyanide levels and may pose a greater hazard if tank moisture decreases or temperatures increase. Waste samples from 2 of these tanks show that the waste is much less reactive than expected, because of radiolytic decomposition and chemical reactions called "aging." The USQ declared in 1990 was closed in March 1994. The Program Plan was updated and transmitted to the DNFSB in October 1994. It is necessary now to complete characterization of the remaining ferrocyanide tanks to determine whether they also are within the parameters of the safety envelope that have now been established.
>
> Organic/Nitrate Reactions: The floating organic layer in Tank 103-C was declared a USQ in 1992, and resulted in a program to resolve this safety issue for Tank 103-C and to identify safe storage requirements. Sampling of the organic layer and headspace of Tank 103-C revealed low flammability (i.e., 6 to 7% of the lower flammability limit). As a result, the USQ was closed in May 1994. A strategy plan, under development at Hanford, addresses the safety issues for the original 9 high-priority organic tanks and the additional 10 tanks added in May 1994. Concerns remain about the organic constituents in both the liquid and solid waste fractions. Based upon calorimetric and other experimental work, safety parameters have been identified, and it must be determined whether Watch List tanks are within these parameters.
>
> High Heat: Periodically, water is added to Hanford Tank 106-C to maintain tank temperatures within structural limits. Since the practice of adding cooling water would present a dilemma in the event that a leak occurred, a plan to address this issue has been developed. Short-term interim actions being considered include the following: 1) eliminating drainable liquid, 2) providing barriers to prevent leakage of drainable liquids, and 3) partially removing the heat source. Ultimately, this safety issue will be resolved by retrieving the waste, as agreed to in the

Tri-Party Agreement. Characterization of the tank wastes, studies of thermal behavior, and installation of a chiller to cool the tanks' ventilation air, are necessary before the wastes can be retrieved.

Criticality: Although a number of safety issues require resolution, a DOE review of the Hanford tank farms nuclear criticality safety program, and a safety assessment which provided the basis for USQ resolution, indicated that no imminent risk of a criticality event exists. Further work is required to assure continued tank criticality safety, in normal operations as well as in future activities such as waste retrieval and pretreatment. This will involve documentation of procedures, training, operating limits, and other factors relevant to the safety issue.

Noxious Vapors: In 1987, worker exposure incidents identified tank farm vapor issues. The vapor program is designed to identify vapor sources and compositions, resolve vapor flammability concerns (i.e., flammable levels might exist in some tanks), identify resolution measures, and ultimately relax supplied air restrictions. Currently, only specific areas and operations in the tank farms require supplied air use. However continued monitoring is required to verify the location and conditions of release, their severity and mitigating measures that may be required.

NUCLEAR FUEL PROGRAM

Mr. Myers. Describe the spent nuclear fuel program, where the work is being performed and the funding for the effort. How is this effort coordinated with the other departmental programs such as the spent nuclear fuel program managed by the Office of Nuclear Energy?

Mr. Grumbly. Environmental Management (EM), Nuclear Energy (NE) and Defense Programs (DP) are responsible for DOE-owned spent fuel; that is, fuel not owned by the utilities regulated by the Nuclear Regulatory Commission. The Office of Civilian Radioactive Waste Management (RW) is responsible for planning and implementing the disposal of both civilian and Department-owned spent fuel in a deep geologic repository.

In general, funding for implementing the spent fuel program is contained within the operations budgets of the various sites. Funding specifically allocated to correct vulnerabilities associated with the storage of spent fuel was approximately $50M in FY 1994 and is approximately $90M in FY 1995.

Almost all of the storage of spent fuel is managed by EM. Less than 3% is managed by NE and DP. Ninety-five percent (by total mass) of Department-owned spent nuclear fuel is stored in facilities at four locations: Hanford, Washington (50 percent); the Idaho National Engineering Laboratory (32 percent); the Savannah River Site near Aiken, South Carolina (12 percent); and the West Valley Demonstration Site in New York State (1 percent). The remainder is stored at several other sites including Brookhaven National Laboratory, New York; Los Alamos and Sandia National Laboratories in New Mexico; Oak Ridge National Laboratory, Tennessee; and at universities throughout the country.

The mission of the Spent Nuclear Fuel Program within the Office of Environmental Management is to safely, reliably, and efficiently manage Department of Energy-owned spent nuclear fuel and to prepare it for eventual disposal. The primary near-term objectives are to ensure that any necessary new facilities are designed to national consensus standards and are available in a timely manner when it is not feasible or cost-effective to upgrade these older facilities.

The Office of Spent Fuel Management integrates and develops guidance to implement the program, as well as helps to resolve safety issues at the sites. The Idaho Operations Office, with the Idaho National Engineering Laboratory, provides support to this Headquarters' office. Additionally, personnel from the Operations Offices and Management and Operating contractors work closely with us, in a number of formal working groups, to develop complex-wide approaches on vital issues such as technology development, project integration and interim storage.

The documents we prepare, such as responses to Congressional inquiries, environmental impact statement drafts, program plans and guidance, and directions to the field offices, are coordinated with NE and DP. We coordinate with these programs and RW to ensure interim safe storage and eventual disposal, as well as to ensure that transport of excess spent fuel to other storage sites is accomplished to allow continued operation of research reactors. This coordination is accomplished through my Office of Spent Fuel Management whose staff co-chair joint program and complex-wide working groups dealing with the storage and preparation of spent fuel for disposal. Storage plans throughout the DOE-complex are developed through a systems engineering process with participation by the involved program and operations offices.

WASTE DISPOSAL COSTS

Mr. Myers. Please identify the current cost of waste disposal for each type of waste managed by the Department? How are these costs calculated? How does the cost of low-level waste disposal compare with the cost of disposal in private sector?

Mr. Grumbly. The following unit cost information was derived from preliminary data used to develop the Fiscal Year 1995 Baseline Environmental Management Report (BEMR). Unit costs do not include waste treatment activities at the waste generator sites. Ranges are a result of variances associated with data collection at a multitude of locations throughout the DOE complex. Unit costs for disposal are given in 1995 dollars.

Waste Type	Cost/Cubic Meter	Comment
High-level waste	$200,000 - 300,000	Repository Disposal Fee. Based on total volume of waste to be shipped to repository.
Transuranic	$ 30,000 - 40,000	Range reflects WIPP disposal with various receipt rates.
Low-level	$ 500 - 3,000	Range reflects various site practices from Nevada Test Site at lower end to Eastern sites such as Savannah River using engineered vaults.
Mixed low-level	$ 1,500 - 5,500	Ranges based on site estimates.

As a comparison, commercial low-level waste disposal costs for U. S. Ecology at the Hanford Site and ChemNuclear at Barnwell were approximately $1,700/cubic meter for disposal. These costs include activities associated with complying with Nuclear Regulatory Commission requirements (i.e., license, waste acceptance program, site characterization, performance assessment, site monitoring, etc.)

PROGRAM MANAGEMENT

Mr. Myers. For the program management activity, provide by site a list of specific tasks performed and funding for each task for fiscal years 1994, 1995 and 1996.

Mr. Grumbly. I would like to provide that information for the record, broken down by appropriation. (the information follows)

Environmental Management
FY 1996 Congressional Budget Request
Waste Management (Defense)
($ in Thousands)

SITE/ACTIVITY	FY 1994 ADJUSTED	FY 1995 ADJUSTED	FY 1996 REQUEST
Albuquerque			
Program Control	$ 3,635	$ 2,645	$ 5,100
Env Mgmt & Technical	1,111	1,100	897
AIP, State of New Mexico	3,396	3,514	2,816
Waste Minimization Planning	3,396	3,214	2,000
Subtotal, Albuquerque	11,538	10,473	10,813
Chicago			
Program Integration	680	718	3,000
Waste Minimization Planning	82	389	0
Subtotal, Chicago	762	1,107	3,000
Headquarters			
Program Support & Technical Analysis	108,922	58,024	40,003
Waste Minimization Program Tech	11,100	22,500	16,000
Spent Fuel Management	28,000	9,000	0
Subtotal, Headquarters	148,022	89,524	56,003
Idaho			
National Spent Nuclear Program	0	4,500	0
Waste Minimization/Pollution Prevention	1,770	2,154	0
Agreement-in-Principle	3,670	2,960	1,960
Subtotal, Idaho	5,440	9,614	1,960
Nevada			
Program Planning	3,300	5,192	2,574
Waste Minimization Planning	586	769	621
Operations Support	0	0	1,554
Subtotal, Nevada	3,886	5,961	4,749

Environmental Management
FY 1996 Congressional Budget Request
Waste Management (Defense) (continued)
($ in Thousands)

SITE/ACTIVITY	FY 1994 ADJUSTED	FY 1995 ADJUSTED	FY 1996 REQUEST
Oakland			
Program Control - Contractor Support	1,486	902	475
FFCAct Implementation	0	761	291
Waste Minimization Planning	500	900	910
Agreement-in-Principle	2,000	2,000	1,500
Subtotal, Oakland	3,986	4,563	3,176
Oak Ridge			
Spent Nuclear Fuel Program	0	0	1,600
Program Control	4,277	3,000	5,080
Reservation Support	5,539	9,219	14,703
Waste Minimization Planning	500	450	4,690
LDR FFCA Treatment Development	10,000	10,000	2,978
Subtotal, Oak Ridge	20,316	22,669	29,051
Richland			
DOE-RL Field Support	6,991	6,022	5,700
Plans & Budgets - Integration	6,000	6,954	7,000
Environmental Support - Planning	10,116	8,843	6,434
Waste Minimization	0	817	566
Environ. Support - Inventories Mgmt	3,275	2,993	0
Subtotal, Richland	26,382	25,629	19,700
Rocky Flats			
Waste Minimization	1,572	1,626	1,470
AIP (Colorado)	2,825	2,845	2,205
Subtotal, Rocky Flats	4,397	4,471	3,675
Savannah River			
Program Control	10,925	7,560	8,701
Waste Minimization	1,100	1,099	650
FFCAct Operations	0	1,443	300
Subtotal, Savannah River	12,025	10,102	9,651
TOTAL, WASTE MGMT (DEFENSE)	$236,754	$184,113	$141,778

Environmental Management
FY 1996 Congressional Budget Request
Waste Management (Non-Defense)
($ in Thousands)

SITE/ACTIVITY	FY 1994 ADJUSTED	FY 1995 ADJUSTED	FY 1996 REQUEST
Albuquerque			
Waste Minimization Planning	$ 20	$ 21	$ 26
Subtotal, Albuquerque	20	21	26
Chicago			
Program Control/Support	286	0	873
Waste Minimization Planning	0	0	1,676
Federal Facilities Compliance Act	0	128	0
Subtotal, Chicago	286	128	2,549
Headquarters			
Waste Management Support	2,613	2,837	0
Subtotal, Headquarters	2,613	2,837	0
Oakland			
Program Control/Support	0	500	753
Waste Minimization Management	400	756	865
Subtotal, Oakland	400	1,256	1,618
TOTAL, WASTE MGMT (NON-DEF)	$3,319	$4,242	$4,193

SEAMLESS CANISTER TECHNOLOGIES

Mr. Myers. Describe the program review of seamless canister technologies.

Mr. Grumbly. Two deep drawn, seamless canisters were received in April 1993. They were inspected, verified to meet procurement specifications, and accepted for use. Both deep drawn canisters were filled with glass during the first DWPF melter pour test in 1994. These canisters have been sent to the canister test facility for surface analysis, corrosion resistance, and drop testing, which is consistent with testing performed on the current rolled and welded canister design.

Additionally, two experimental spun canisters, also of a seamless design, were procured. These spun canisters were used during the same test as the deep drawn canisters and are planned to be subjected to the same tests.

WASTE ISOLATION PILOT PLANT

Mr. Myers. Please describe the status of WIPP including major milestones through waste acceptance.

Mr. Grumbly. In October 1992, the Congress passed the WIPP Land Withdrawal Act (Public Law 102-579) (LWA) which transferred public lands to the Department of Energy (DOE). The LWA also established about 140 separate requirements for DOE and other Federal Agencies. Among the new requirements were: (1) a new regulatory framework, including the Environmental Protection Agency (EPA's) certification of WIPP's compliance with the radioactive waste disposal standards (40 CFR 191) prior to use of WIPP for disposal site, and (2) a new regulatory framework for testing. Up until October 1993 DOE focused on testing and the requirements governing testing. In October 1993, the DOE tests using radioactive waste at laboratories rather than at WIPP. This laboratory will collect required data more quickly and at lower costs, and was embraced by the scientific community as a more scientifically-sound approach. Accordingly, DOE's efforts are now focused on demonstrating that WIPP will comply with the final disposal requriements in 40 CFR Part 191 and with RCRA.

DOE is now implementing this new strategy in full coordination with EPA and the State of New Mexico, and is aggressively preparing the documents which incorporate the results of ongoing experiments and analyses:

(1) a draft certification application, which DOE will submit to EPA by March 1995.
(2) a final certification application which DOE will submit to EPA by December 1996,
(3) a No Migration Variance Petition for Disposal for submission to EPA in May 1995, and
(4) a revised Part B application to the New Mexico Environment Department in May 1995.

DOE will also issue a supplemental environmental impact statement in October 1997.

Mr. Myers. Is the June 1998 date for initial disposal operations still firm?

Mr. Grumbly. DOE will submit a final certification application to EPA in December 1996. If the application is approved, EPA certification for disposal is expected in December 1997. Following receipt of this certification, and the completion of other environmental (such as a supplemental EIS) and operational readiness activities, the Secretary would make a decision in January 1998 to operate the facility for disposal of TRU waste. Operations would begin in June 1998, after a 180-day waiting period required by the WIPP Land Withdrawal Act.

Mr. Myers. Identify by group the funding provided to all state and local groups associated with WIPP in fiscal years 1994, 1995, and 1996. Is this funding included in the WIPP budget?

Mr. Grumbly. The following funding is provided to these groups and is included in the WIPP budget:

	FY 1994 (Millions)	FY 1995 (Millions)	FY 1996 (Millions)
Western Governors	1.2	.1	1.2
Indian Tribes	.1	.2	.2
Southern States Energy Board	.1	.1	.1
New Mexico Emergency Response	0	.7	.7
National Academy of Sciences	0	0	.3
Carlsbad Environmental Monitoring and Research Center	5.4	2.5	3.5
Advanced Manufacturing Center	0	0	.3
TOTAL	6.8	3.6	6.3

Mr. Myers. Identify all operating, capital equipment and construction funding for WIPP in fiscal years 1994, 1995, and 1996. Breakout funding by detailed activities. Identify which funding goes to the WIPP site and which to other facilities. How many contractor employees are funded in each year?

Mr. Grumbly. The following identifies the funding by type for fiscal years 1994, 1995, and 1996.

	FY 1994	FY 1995	FY 1996
Operating	171.8	166.4	163.8
Capital Equipment	4.2	5.3	1.5
Construction	2.9	2.6	7.4
TOTAL	178.9	174.3	172.7

	FY 1994		FY 1995		FY 1996	
ACTIVITY	WIPP	NTP	WIPP	NTP	WIPP	NTP
Westinghouse	78.3	2.4	73.4	3.2	71.8	3.8
SNL/LANL/ANL	52.6	1.3	59.2	1.3	52.5	1.1
Waste Characterization	0	18.9	0	9.8	0	14.7
Technical/Institutional	29.4	2.4	23.3	3.4	21.7	3.0
Electrical Line Item Project	0	0	7	0	4.1	0
TOTAL	160.3	25.0	156.6	17.7	150.1	22.6
GRAND TOTAL	185.3		174.3		172.7	

	FY 1994	FY 1995	FY 1996
Contractor Employees:	1,058	969	990

Note: NTP means National Transuranic Program Office

CARLSBAD ENVIRONMENTAL MONITORING AND RESEARCH CENTER

Mr. Myers: Describe the Carlsbad Environmental Monitoring and Research Center program including funding for specific activities in fiscal years 1994, 1995, and 1996.

Mr. Grumbly: The Carlsbad Environmental Monitoring and Research Center is funded as an independent monitoring program by DOE through the Waste Management Educational Research Consortium and is administered by New Mexico State University. DOE plans to fund the Carlsbad Center as shown below:

FY 1994	FY 1995	FY 1996
$5.4M	$2.5M	$3.5M

The objective of the Carlsbad Center is to independently monitor the effects of WIPP on the local environment for the life of the project. The grant is intended as seed money to help the facility develop into a self supporting research institution and laboratory by the end of the century. The Carlsbad Environmental Monitoring and Research Center is strongly supported by the local community which sees the independent monitoring as a necessary check on, and confirmation of, DOE's activities.

Mr. Myers. What has the Center produced and how has this Center helped the program to date?

Mr. Grumbly. The Center began with the initial grant awarded in July 1991 and the appointment of the Director in August 1991. Since that time, the Center has accomplished the following:

- Establishing the Science Advisory Board made-up of nationally renowned scientists to provide scientific guidance.
- Conducted preliminary studies for initiation of future programs by hosting bioassay workshops to identify needs and requirements for the Center's in vitro and in vivo bioassay programs.
- Developed preliminary field sampling and analysis plans and initiated pilot environmental monitoring programs for air, soil, surface water, and sediments by identifying sampling locations and equipment for the pilot air monitoring program and by identifying sampling locations and collecting soil samples for soil type verification.
- Analyzed historical data and incorporated results into preliminary design of the atmosphere monitoring program.
- Initiated a bioassay program by developing sampling protocols and a questionnaire for program participant selection.
- Calibrated monitoring equipment for whole-body counting and conducted whole-body and lung counts to test in vivo bioassay procedures.
- Initiated global positioning survey program (GPS) by conducting GPS study of surface water basin in the vicinity of WIPP to construct a model of the drainage basin, and by commencing mapping of permanent sampling locations for soil sampling pilot studies.
- Designed the Mobile Bioassay Laboratory.

The Center assists the United States Department of Energy in many ways, including:

- Providing independent state-of-the-art environmental data, which is a major concern to the stakeholders;
- Interacting with the community and other stakeholders to provide a continual forum for feedback and discussions;
- Providing independent testimony in the form of reliable data to oversight, regulatory, and other groups;
- Supporting efforts of the National Transuranic Program through the ability to monitor radionuclides at various generator sites, assisting sites in defining transuranic waste; and
- Providing a practical education path for students through the relationships with academic institutions with a low minority population.

ENVIRONMENTAL RESTORATION

Mr. Myers. How much funding is being spent for actual cleanup and remediation activities, and how much is being spent for studies and paper documentation in FY's 1994, 1995, and 1996?

Mr. Grumbly. My goal for the environmental restoration program has been to get more "on the ground" results. I am pleased to note that we have turned the corner--we are now spending more on actual cleanup than on studies and paper documenation. If our budget is approved as requested, we will be able to continue and improve on this trend.

Specifically, in FY's 1994, 1995, and 1996 we budgeted $925.5, $1,016, and $1,097 million dollars respectively, either directly or indirectly on actual cleanup and remediation activities. Included in the dollar amounts are program management, landlord, compliance, and surveillance and maintenance costs which support our ability to conduct cleanup efforts.

$1050.7, $920, and $836 million were or will be spent in FY's 1994, 1995, and 1996, either directly or indirectly on studies and paper documentation. This dollar amount includes well drilling, sampling and analysis, program management, landlord, compliance, and surveillance and maintenance costs which support our ability to conduct assessment activities.

As outlined in the table below, the ratio of money spent on remediation to money spent on assessment has risen from $0.88:1 in 1994 to $1.10:1 in 1995, and climbs to $1.31:1 in the Administration's FY 1996 budget request.

Comparison of Remediation and Assessment (in $ millions):

	Remediation	Assessment	$R/$A	
D&D Fund				
FY 1994	$925.5 (44%)	1050.7 (50%)	0.88	$129.8 (6%)
FY 1995	$1,016 (50%)	$920 (44%)	1.10	$134 (6%)
FY 1996	$1,097 (48%)	$836 (37%)	1.31	$350 (15%)

Mr. Myers. When will site assessment be completed?

Mr. Grumbly. The Department of Energy has completed close to 300 of 870 planned assessments. Each assessment typically involves the detailed evaluation of a release site or logical grouping of release sites. Within the next five years DOE plans to complete approximately 250 more assessments.

In general, most sites have completed the initial scoping stage. The present goal of the program is to prioritize the more detailed stages of assessment based upon the urgency of the project and the funding of the program. In an effort to accelerate the assessment process, the environmental restoration program has embraced the Streamlined Approach for Environmental Restoration (SAFER). This approach involves the consolidation of the Data Quality Objectives process and the Observational Approach. The Data Quality Objectives process enhances the probability that the appropriate amount and quality of data will be collected in the assessment phase. The Observational Approach accepts some degree of uncertainty at a site and works around those uncertainties in order to advance into the remediation phase of a project.

DOE characterization activities will likely continue well beyond the year 2000 with current budget projections. Should budget projections change dramatically, the time required to complete these planned assessments will also change.

ROCKY FLATS COMMUNITY WATER SUPPLY PROJECT

Mr. Myers. What is the status of the Rocky Flats community water supply project?

Mr. Grumbly. The City of Broomfield, Colorado has made significant progress replacing and safeguarding drinking water supplies in the vicinity of the Rocky Flats Plant. DOE has provided, via a grant, a total of $81.7 million to the City of Broomfield. DOE's payment of $11.7 million this fiscal year 1995 to the City of Broomfield completes our financial commitments to this project. The City's construction projects will continue for the next two years using carryover funds. The offsite water management project (also know as Option B) consists of two projects: the Great Western Reservoir Replacement Project and the Standley Lake Protection Project.

The following is the current status of the Standley Lake Protection Project:

- Construction of Kinnear Ditch Pipeline is progressing ahead of schedule. The schedule and completion is anticipated in early March.
- The cities continue to work with DOE and the Colorado Department of Public Health and Environment on the operations plan for Woman Creek Reservoir.
- The contract for construction of Woman Creek Reservoir was put out for bid and awarded.
- The cities are in the process of purchasing the Open Space property owned by Jefferson County necessary for construction of the Woman Creek Reservoir.
- The alignment of the final section of the Woman Creek Pipeline has been agreed to by the City of Broomfield. Final design is underway and the pump station and pipeline will be constructed during the summer of 1995.
- The construction of the Wetlands Mitigation Site is complete and the site is awaiting planting in the spring of 1995.
- The public information portion of the Standley Lake Protection Project continues with information bulletins, press briefings, classroom instruction and one on one meetings.

The following is the current status of the Great Western Reservoir Replacement Project:

- The water rights purchase from the City of Boulder is complete.
- Phase I of the Raw Water Pipeline construction is 90% complete (i.e., modifications to the Carter Lake outlet works).
- Phase II of the pipeline construction consists of building the pipeline from the end point of Phase I to Broomfield Water Treatment Facility. The contractor completed the installation of the 45-inch diameter main pipeline. Work continues on the fabrication of the main pipeline.
- Property acquisition for the pipeline's right-of-way is 95 percent complete. Work is progressing through several condemnation hearings to acquire possession of the final right-of-way parcels.
- The city continues to study alternate routes for the treated water pipeline.
- The final design for the Water Treatment Facility will be completed in 1995.
- No progress to date has been made on the Category I water rights sale. Meetings are scheduled in 1995.

FERNALD AND WEST VALLEY CLEANUP ACTIVITIES

Mr. Myers. Describe the status of the cleanup programs at Fernald and West Valley.

Mr. Grumbly. For the Fernald site, we accomplished a number of significant activities relating to cleanup actions. Assessment activities are coming to a close with the finalization of Records of Decision for the site; we issued two Records of Decision in FY 1994, we will issue three in FY 1995, and we will issue the final Record of Decision in FY 1996. Completion of the assessment phase will allow the Department to focus more on the cleanup of the site. Remedial action is underway. We demolished two major plant structures in FY 1994, and another two major plant structures will be demolished in FY 1995. We started the construction of the Operable Unit 4 pilot vitrification plant in FY 1994. In FY 1995, we will complete five removal actions, bringing the total to 23 removal actions completed at the site. This includes the completion of the K-65 Silos removal action which addressed the single largest point source of radioactive airborne contamination from the site. In FY 1995, we will ship an additional 575,000 cubic feet of low-level waste to Nevada for disposal, bringing the total amount disposed of in Nevada to 4,300,000 cubic feet. This includes the disposal of 149 out of 1,100 tons of thorium stored on site at Fernald. In FY 1994, we removed 31,400 cubic feet of mixed waste backlog from the site, and we plan to dispose of 15,000 cubic feet of mixed waste in FY 1995. We performed a work force restructuring action in FY 1994, and one is currently underway to better focus the work force on performance of the cleanup action. We are also recycling scrap metal. In summary, we have made significant progress at the Fernald site, and ongoing accomplishments will lead to successful remediation.

The West Valley Demonstration Project in New York State is on schedule to solidify the high-level radioactive waste in the January 1996 through December 1998 time period. We are maintaining the cost of the project in accordance with the project baseline. An Environmental Impact Statement is being prepared for the next phase of the West Valley program, which will primarily involve decommissioning and decontamination of the high-level waste and potentially some remedial actions on the site. We expect a Record of Decision in early FY 1997.

URANIUM MILL TAILINGS SITES

Mr. Myers. How would you characterize the risk associated with the uranium mill tailings sites compared to other waste problems throughout the complex?

Mr. Grumbly. The 24 inactive uranium processing sites designated for cleanup by the Uranium Mill Tailings Radiation Control Act were owned and operated by private companies. As a result the tailings were left in the open with little or no efforts to contain the tailings themselves or the release of radon, the principal health hazard from uranium tailings. A number of the sites are within or adjacent to populated areas. The biggest risk comes from the extensive use of tailings for construction fill near most of the sites; in particular Grand Junction, CO, where over 4,000 properties, including homes and businesses, were contaminated with tailings. Most of these properties have been remediated. In contrast, the hazards associated with wastes at DOE owned and operated sites were at least partially known, and efforts were made to contain them within the boundaries of the sites.

DOE CLEANUP WORK STANDARDS

Mr. Myers. Are sites in the DOE program cleaned up to a standard that exceeds the cleanup required at comparable commercial sites which are not part of the federal program?

Mr. Grumbly. For uranium mill sites that are regulated under authority of the Uranium Mill Tailings Radiation Control Act, there are only minor differences between the regulations for the Title I sites that are the responsibility of the Department and the Title II sites that are the responsibility of the commercial licensees. Specifically, Title I sites can be remediated to comply with a radon flux standard or a radon concentration in air standard, but Title II sites must comply with the radon flux standard. However, the Department has opted to comply with the flux standard, so both types of sites are using the same regulation. Also, there are some minor differences regarding who has regulatory authority over flux testing at completed sites.

Title I sites are allowed to apply for supplemental standards, which means that relief from the standards may be allowed if the health or environmental benefits of a facet of the cleanup are small when compared to factors such as cost, environmental damage, or worker risk of performing the cleanup. Other NRC regulations provide for exemptions or variances at Title II sites that could be roughly equivalent to supplemental standards.

In the Formerly Utilized Sites Remedial Action Program (FUSRAP), cleanups are accomplished to comply with the requirements in Chapter IV of DOE Order 5400.5. Although the regulatory scheme in the DOE Order is different than that used for commercial facilities, the technical requirements are comparable to those used by the U.S. Nuclear Regulatory Commission. For example, the surface contamination criteria in DOE Order 5400.5 are identical to those in the NRC Regulatory Guide 1.86. The cleanup levels for radium in soil (5 picoCuries per gram in surface soil and 15 picoCuries per gram in subsurface soil) are the same as that established by EPA for uranium mill tailings sites. For other radioactive species in soil, DOE performs a site specific calculation to meet the radiation dose requirements in DOE Order 5400.5. [The dose limit in the Order is less than that caused by 5 picoCuries per gram of radium in soil.] In short, the technical cleanup levels are comparable, although the procedures and administrative scheme are different.

There is also another consideration that is important. The actual cleanup of a site is usually accomplished at a level significantly below the applicable cleanup level. This happens for several reasons. First, in order to remove all material above the guideline, some soil contaminated below the guideline will be removed. This will have the practical effect of lowering the cleanup level as it is applied during cleanup operations. Second, during cleanup operations, it is difficult to precisely delineate the point at which contamination above the cleanup level ends. As a result, remedial personnel remove suspect materials to avoid repeated cleanup operations in the same area. A third practical consideration is the use of clean fill material to replace excavated materials. This causes a shielding and covering effect on the remaining soils, reducing gamma ray and dust exposures. In the approval of cleanup limits, these effects are not considered.

Finally, there has been a useful sharing of resources and information concerning cleanup levels with other agencies, such as EPA, NRC, and various state agencies. For example, both of those agencies are using DOE's Residual Radioactivity computer code, which was developed to determine soil remediation levels, radiation dose, and human health risk from contaminated soil. It is beneficial to have common and accepted risk calculation methodologies among the affected parties.

NUCLEAR MATERIALS AND FACILITIES STABILIZATION

Mr. Myers. The Office of Nuclear Safety is preparing a report on aging buildings and the Office of Field Management has reviewed aging facilities as part of the Capital Assets Management Plan/Conditional Assessment Survey programs. Are either of these studies of use to your program needs?

Mr. Grumbly. The former Office of Nuclear Safety prepared an April 1994, report "Status of Age and Degradation in the Department of Energy - A Summary of Six Site Visits for the Aging and Integrity Project". That summary document discusses the degree to which the aging of various facilities has occurred and provides useful background information.

EM is responsible for over 7,000 buildings and structures throughout the DOE complex. Information that assists us in focusing our scarce resources is always useful. The Office of Field Management Capital Asset Management Process/Condition Assessment Survey (CAMP/CAS) is useful tool for the Office of Environment Management (EM). EM has been involved actively involved with its design and execution since its inception. The data gathered on various facilities throughout the complex help us determine the physical condition of many of our facilities, and are beneficial as EM makes decisions as to which maintenance and deactivation projects receive near-term funding. These data also serve a role in the decision-making process related to prioritizing which surplus facilities are transferred to EM for immediate attention. EM already has management responsibility for over 7,000 buildings and structures throughout the DOE complex and, therefore, it is useful to have access to information that assists in the focusing of scarce resources.

PROGRAM SUPPORT

Mr. Myers. Provide a detailed list by site of all activities and associated funding in the program support budget in fiscal years 1994, 1995, and 1996.

Mr. Grumbly. I would like to provide that information for the record.

Environmental Management
FY 1996 Congressional Budget Request
Nuclear Materials and Facilities Stabilization (Defense)
($ in Millions)

SITE/ACTIVITY	FY 1994 ADJUSTED	FY 1995 ADJUSTED	FY 1996 REQUEST
Headquarters			
Independent Technical Expertise	$ 5.6	$ 3.1	$ 7.1
Support Service Contracts	3.4	4.6	4.6
Subtotal, Headquarters	9.0	7.7	11.7
Richland			
General Support Service Contracting	16.9	17.2	17.1
Hanford Site Support	1.2	1.5	1.5
Downwinder Litigation	6.7	9.2	8.0
Hanford Environ. Dose Reconstruction	0.0	4.3	2.0
Declassification	0.2	0.0	2.0
Human Radiation Test Documentation	0.3	0.0	1.0
Payment in Lieu of Taxes	0.0	0.0	2.0
Economic Transition	0.0	0.0	2.0
Hanford Health Information Network	2.8	0.0	2.0
Yakima Indian Nation Grant	0.8	0.9	0.0
Nez Perce Indian Nation Grant	0.6	0.4	0.0
Umatilla Indian Nation Grant	0.5	0.6	0.0
State of Oregon Grant	0.4	0.5	0.4
State of Wash TPA Grant	1.5	4.9	4.5
Hanford Filter Test Facility	0.3	0.5	0.4
State of Wash Envir Monitoring Grant	0.5	0.6	0.3
State of Wash Emergency Prepare Grant	0.6	0.6	0.3
Subtotal, Richland	$33.3	$41.2	$43.5

Environmental Management
FY 1996 Congressional Budget Request
Nuclear Materials and Facilities Stabilization (Defense) (continued)
($ in Millions)

SITE/ACTIVITY	FY 1994 ADJUSTED	FY 1995 ADJUSTED	FY 1996 REQUEST
Rocky Flats			
Litigation Expenses (Rockwell/Dow)	5.0	5.0	5.0
AIP State of Colorado	0.0	0.0	2.2
Strategic Plan, Support Service Contracts, Liability Reduction	0.0	0.0	17.2
Subtotals, Rocky Flats	5.0	5.0	24.4
Savannah River			
Historically Black Colleges & Univ	0.0	0.0	1.3
Payment in Lieu of Taxes	0.0	0.0	3.0
U.S. Forest Service	0.0	0.0	11.2
SR Ecology Lab	0.0	0.0	9.9
Training Support (ORISE)	0.0	0.0	2.3
Geological Surveys & Analysis	0.0	0.0	1.6
Low Value Equipment	0.0	0.0	1.6
Security Processing Support (SAIC)	0.0	0.0	5.7
Support Service Contracts	0.0	0.0	13.8
ES&H Support	0.0	0.0	14.7
Subtotal, Savannah River	0.0	0.0	65.1
TOTAL, Program Support	$47.3	$53.9	$144.7

PROGRAM INTEGRATION

Mr. Myers. Provide a detailed list by site of all activities and associated funding in the program integration budget in fiscal years 1994, 1995, and 1996.

Mr. Grumbly. In response, the following information is provided for the record.

Environmental Management
FY 1996 Congressional Budget Request
Nuclear Materials and Facilities Stabilization (Defense)
($ in Millions)

SITE/ACTIVITY	FY 1994 ADJUSTED	FY 1995 ADJUSTED	FY 1996 REQUEST
Albuquerque			
Pinellas Site Transition Plan for Surplus Facilities	$ 0.0	$ 0.4	$ 1.0
Subtotal, Albuquerque	0.0	0.4	1.0
Chicago			
Transition Planning for Contaminated Facilities	$ 0.0	$ 0.0	$ 0.3
Subtotal, Chicago	0.0	0.0	0.3
Idaho			
Program Planning Documents, INEL (conceptual design, electrical/utility systems upgrades, etc.)	4.8	0.0	0.0
Environmental compliance, quality assurance, & engineering & graphics support activities	2.5	21.4	23.8
Subtotal, Idaho	7.3	21.4	23.8
Oakland			
Site Transition Plan for Surplus Facilities	0.0	0.5	0.0
Subtotal, Oakland	0.0	0.5	0.0
Oak Ridge			
Implementation of Facility Transition activities		0.0	0.0 0.6
Subtotal, Oak Ridge	0.0	0.0	0.6

Environmental Management
FY 1996 Congressional Budget Request
Nuclear Materials and Facilities Stabilization (Defense) (continued)
($ in Millions)

SITE/ACTIVITY	FY 1994 ADJUSTED	FY 1995 ADJUSTED	FY 1996 REQUEST
Ohio			
Mound Site Transition Plan for Surplus Facilities	0.0	0.4	0.4
Mound Safe Shutdown	0.0	0.0	7.0
Subtotal, Ohio	0.0	0.4	7.4
Richland			
Programmatic and administrative support for Plutonium Finishing Plant/PUREX/300 Area Fuel Supply Shutdown/Uranium Oxide[3] Plant Environ. Compliance activities	7.0	5.6	7.0
Subtotal, Richland	7.0	5.6	7.0
Rocky Flats			
Strategic Plan, Liability Reduction Teams, program documents	4.2	0.8	0.0
Subtotal, Rocky Flats	4.2	0.8	0.0
Savannah River			
Site Transition Plan	0.0	0.5	1.2
Program management planning, pre-project planning, other program mgmt support costs, quality assurance activities	0.0	0.0	22.0
Subtotal, Savannah River	0.0	0.5	23.2
TOTAL, Program Integration (Defense)	$18.5	$29.6	$63.3

Environmental Management
FY 1996 Congressional Budget Request
Nuclear Materials and Facilities Stabilization (Non-Defense)
($ in Millions)

SITE/ACTIVITY	FY 1994 ADJUSTED	FY 1995 ADJUSTED	FY 1996 REQUEST
Oakland			
Bevelac Transition Planning	$ 0.0	$ 0.0	$ 1.0
Subtotal, Oakland	0.0	0.0	1.0
Oak Ridge			
Isotope Facilities	0.0	0.4	0.7
High Ranking Facilities	0.0	0.0	0.4
Subtotal, Oak Ridge	0.0	0.4	1.1
Richland			
Fast Flux Test Facility, Hanford	1.6	0.8	0.8
Subtotal, Richland	1.6	0.8	0.8
TOTAL, Program Integration (Non-Def) . .	$ 1.6	$ 1.2	$ 2.9

NUCLEAR MATERIALS AND FACILITIES STABILIZATION

Mr. Myers. Why is support requested for the Pinellas plant when it is being transferred to a local area development group? What are the ongoing expenses required of DOE and how long will they continue?

Mr. Grumbly. DOE and Martin Marietta Specialty Components, Inc. (serving as the management and operating contractor) will be required to maintain a significant presence at the Pinellas Plant until the shutdown and disposal activities are complete. The Department has targeted completion of these actions by the end of FY 1997.

For FY 1996, the Department is requesting $46.4 million in the Office of Nuclear Materials and Facilities Stabilization budget; $4.0 million in the Environmental Restoration budget and $2.4 million in the Waste Management budget for shutdown and cleanup activities. An equivalent amount of funds will be required in FY 1997 to complete site cleanup. In addition, Defense Programs has requested $7.1 million to pay for a tax liability relating to operations prior to the site transfer to Environmental Management. The Department is continuing its evaluation of the action needed to meet the FY 1997 completion date and, if necessary, we may need to revise this request.

WORKFORCE RESTRUCTURING COSTS

Mr. Myers. By site, what is the cost of workforce restructuring activities in fiscal years 1994, 1995, and 1996?

Mr. Grumbly. The following schedule lists the work force restructuring costs for each of the Environmental Management sites for FY 1994 and the estimated costs for FY 1995. While costs for FY 1996 cannot be determined at this time since FY 96 restructuring plans and benefit levels have not been determined, the guidance to field sites is to maintain a per-employee cost average not to exceed $25,000.

Since the figures below are those from sites reporting to the Office of Environmental Management, they do not include restructuring costs at non-EM sites. At those sites some of the restructuring costs are borne by the EM program, some by special Section 3161 appropriations for restructuring costs, and some by other programs of the Department.

The principal elements in the costs shown are the incremental costs of early retirement and voluntary separation programs. Some of the sites also included retraining, relocation or other smaller cost categories associated with restructuring. This chart does not reflect the savings that will accrue as a result of these restructuring actions. In all cases the savings will exceed the incurred or estimated costs.

Site	FY 1994	FY 1995(Est.)
Fernald (OH)	$3.5 million	8.0
Mound (OH)	12.9	7.0
Idaho (INEL)	1.3	22.4
Rocky Flats	32.7	31.8
Savannah River	9.6	90.0
Hanford	-0-	76.4
TOTAL	58.0	235.6

SAVANNAH RIVER TECHNOLOGY CENTER

Mr. Myers. Describe the mission of the Savannah River Technology Center and provide total funding by program for the Center in fiscal years 1994, 1995, and 1996.

Mr. Grumbly. The mission of the Savannah River Technology Center (SRTC) is to develop, deploy and exchange high-impact technologies that satisfy the needs of the Savannah River Site, federal and commercial customers and significantly enhance the industrial competitiveness of our nation and economic viability of the southeast region while fostering a workforce noted for its safety excellence, innovativeness, rich diversity, environmental stewardship, and devotion to quality. Programmatic activities such as the defense waste processing are being moved to the Defense Waste Processing Facility. In addition, the DOE Savannah River Operations Office has the lead in the landfill and plume focus areas and the SRTC will be conducting applied research in these areas.

PROGRAM	FY94 (Millions)	FY95 (Millions)	FY96 (Millions)
DP-DEFENSE	$66.3M	$34.6M	$12.6M
EM-ER&WM	78.7	81.0	89.5
NN-NONPROLIFERATION	4.3	4.4	2.7
ENERGY RESEARCH	.3	.3	.2
NE-NUCLEAR ENERGY	.3		
WFO/MPO/OTHER	5.9	6.3	7.7
TOTAL	$155.8M	$126.6M	$112.7M

TECHNOLOGY DEVELOPMENT

Mr. Myers. The three highest priorities of the Environmental cleanup program are plutonium vulnerabilities, spent nuclear fuels, and Hanford Tanks. However, the newly restructured technology development program focuses on only one of these areas. Why are no technology development efforts being directed at plutonium vulnerabilities and spent fuels? What research is being done in these areas and who is doing it?

Mr. Grumbly. Environmental Management is currently involved in activities to address the technology development needs of all three priorities.

Correction of the plutonium vulnerabilities involves other elements of the Department in addition to Environmental Management, so a committee has been established to address the entire spectrum of technology and research needs for addressing plutonium vulnerabilities. The committee's recommended plan will be complete by November 1995. This effort is being designed with a life cycle systems approach that will identify available baseline technologies/systems and will identify applied research opportunities. The identified opportunities will be evaluated relative to cost effectiveness, reduction in risk and the quality of final stabilized form. Los Alamos National Laboratory will be the Lead Laboratory for the research and development tasks under this program. Some examples of specific research that is currently being conducted are:

- Development of standards for residues storage at Rocky Flats and Los Alamos. The joint Los Alamos-Rocky Flats project includes the characterization of residue items and containers, establishment of surveillance procedures, and definition of storage container qualifications.

- Development of a precipitation process for Rocky Flats plutonium solutions.

- Bagless transfer systems are in various stages of development at several laboratories. Deployment of such systems will permit containers to be filled while remaining free of external contamination.

- Oxidation of combustible wastes by means other than incineration are being investigated jointly by Rocky Flats and Los Alamos.

- Vitrification of plutonium in glass for long-term storage and disposal at the Savannah River and the Oak Ridge sites.

EM has established the Radioactive Tank Waste Remediation Focus Area to coordinate technology development activity across the DOE complex including the Tank Waste remediation system and other tank operational activities at Idaho, Hanford, Oak Ridge and Savannah River. These activities include technologies for characterization, retrieval, and treatment of underground storage tank waste to alleviate safety and environmental problems associated with the highly radioactive and hazardous waste.

Also, EM has issued The Technology Integration Plan (Rev.0) on December 22, 1994, which provides the framework for coordination of all technology related to spent nuclear fuel. The technology covered includes that required for existing storage, interim storage, and for ultimate disposal in a geological repository and currently covers the plans for this technology through FY 1998. The plan is a living document and will be revised as needed to reflect ongoing technology needs and budgetary realities in this important area.

Mr. Myers. It appears that the technology development program has been severely focused on near-term technology development. Isn't this very short-sighted? Who is doing the long-term research necessary for those cleanup problems that today have no solution?

Mr. Grumbly. The Department shares your concern about the long-term nature of the environmental cleanup activity and is taking measures to assure an appropriate research and development scope.

Currently, the Environmental Management's technology development program is structured into five problem or "Focus Areas" to address the pressing environmental challenges: mixed waste characterization, treatment, and disposal; radioactive waste tank remediation; contaminant plume containment and remediation; landfill stabilization; and facility deactivation, decommissioning, and material disposition. These Focus Areas, led by the Office of Environmental Management, contain a program mixture of both short-term and long-term milestones. Therefore, we are adapting a life-cycle systems approach for each of the Focus Areas to accelerate the adaption and implementation of technology systems to address these milestones. Environmental Management's technology development program is a national program and focuses on applied research and development. In addition, the Focus Areas address the long-term, basic research needs by coordinating technology development activities with other DOE offices (including the Office of Energy Research) and other Federal agencies. Where necessary ongoing research is not being conducted, EM's Office of Technology Development conducts the needed research.

In addition, the technology development program has supported the National Science Foundation's (NSF) Industry/University Cooperative Research Centers and funded a special project at NSF's Center for Process Analytical Chemistry.

Also, in cooperation with the Environmental Protection Agency (EPA), the technology development program supports EPA's Hazardous Substance Research Centers Program that is university based across the U.S. The Strategic Lab Council, comprised of senior-level representatives from the Department's national laboratories, meets regularly to evaluate the Environmental Management program activities to identify potential areas where the laboratories can contribute by performing research to facilitate the long-term activities of the program.

All these activities also help mitigate limited resource concerns by leveraging limited research and development resources.

Mr. Myers. How are the long-term needs of the environmental management complex coordinated with the activities of the Department's basic research programs managed by the Office of Energy Research?

Mr. Grumbly. Presently, the Office of Environmental Management is coordinating its technology development activities with other DOE offices such as the Office of Energy Research, and other Federal agencies. This coordination is conducted from the basic research phase, applied research phase, demonstration phase, and through the implementation phase. The coordination prevents duplicative work and smoothly accelerates the implementation of cost-effective environmental technologies.

In addition to this, the technology development program has supported the National Science Foundation's (NSF) Industry/University Cooperative Research Centers and funded a special project at NSF's Center for Process Analytical Chemistry.

Also, in cooperation with the Environmental Protection Agency (EPA), the technology development program supports EPA's Hazardous Substance Research Centers Program that is university based across the U.S.

And the Strategic Lab Council, comprised of senior-level representatives from the Department's national laboratories, meets regularly to evaluate the Environmental Management program activities to identify potential areas where the laboratories can contribute to long-term research and development needs of the program.

TECHNOLOGY DEVELOPMENT

Mr. Myers. How much of the Department's basic energy research program is contributing to the technology base needed for improved cleanup activities?

Mr. Grumbly. In FY 1994, the Office of Environmental Management restructured its Technology Development (EM/OTD) program into five focus areas. Each focus area is coordinating with other DOE research program offices, such as the Office of Energy Research (OER), and other Federal Agencies. This coordination is conducted across basic research, applied research, demonstration, and through implementation phases. In FY 1995, OER was appropriated $112.6 million for the Biological and Environmental Research, Basic Energy Sciences and Technology Transfer offices. In FY 1996, $128.1 million have been requested by these ofices.

EM/OTD is coordinating with OER to maximize investments related to basic research for environmental applications. Coordination of meetings at the Assistant Secretary level have facilitated a framework for increased coordination and identifying specific efforts that could be on the continuum of research to demonstration. Discussions are ongoing to increase interfaces and mechanisms for linking the two research program offices.

There are numerous examples of where improved coordination and smooth transitioning from basic to applied research phases already has occurred. For example, in efficient separations EM/OTD is coordinating with OER in the development of an Advanced Integrated Solvent Extraction System, Alkaline-Side Technetium and Actinide Solvent Extraction Using Crown Ethers and Other Extractants, and Derivatives of Natural Complexing Agents for Removing Plutonium from Waste Streams. In characterization, EM/OTD is coordinating with the Office of Energy Research in the development of Secondary Ion Mass Spectroscopy.

For the National Science Foundation, EM/OTD have supported NSF's Industry/University Cooperative Research Centers and funded a special project at NSF's Center for Process Analytical Chemistry.

In cooperation with the Environmental Protection Agency, EM/OTD supports EPA's Hazardous Substance Research Centers Program that is university based across the U.S.

Mr. Myers. What are the key technology development areas most likely to benefit cleanup activities in the long-term?

Mr. Grumbly. Over the long term, the greatest benefits will be derived by supplanting extremely costly, time-consuming, and often ineffective baseline cleanup technologies, such as, pump and treat of ground water aquifers, excavation, ex-situ treatment, and redisposal of contaminated soils and perpetual surveillance and maintenance of contaminated facilities. Complicated mixed radioactive and hazardous waste contamination problems, high-level waste storage bulk storage tanks, and removal of dense non-aqueous phase liquids from the ground are examples of problems that are unable to be adequately cleaned up with current technologies. The technology development program includes in its mission decreased costs, reduced risk in the environment, and the accomplishment of what cannot be done with current technology.

The Office of Environmental Management has initiated five technology Focus Areas to address the Department's most urgent cleanup technology needs: Mixed Waste Characterization, Treatment, and Disposal; Radioactive Tank Waste Remediation; Contaminant Plume Containment and Remediation; Landfill Stabilization, and Facility Transitioning, Decommissioning and Final Disposal. In addition to these Focus Areas, the technology development program relies on crosscutting and supporting programs to ensure cost-effective development and integration in the areas of robotics, separations, characterization, monitoring, sensors, commercialization and technology transfer, and industry outreach.

Mr. Myers. One criticism of the technology development program has been lack of measurable performance goals, cost estimates and schedules. Do you have a technology roadmap for the five focus areas? Please describe the project plan, milestones, and date of completion for each activity.

Mr. Grumbly. Environmental Management places significant attention on the planning and tracking of the execution of its technology development programs. Each focus area has developed long-term strategic plans which manifest themselves in highly detailed execution plans for the current fiscal year. The technology development activities are managed and controlled with an earned value management system. This system requires baselining activities and tracking cost variance, schedule variance and technical status of the program on a monthly basis. Such controls are designed to ensure that the metrics by which technologies are evaluated are properly served. EM's Technology Development Office has developed four performance measures for FY 95: number of improved technologies/systems (bench, pilot, or full-scale) demonstrated; number of improved technologies/systems available for transfer; increasing the leveraging of OTD dollars with other agencies, the private sector and other entities; taxpayer cost savings realized through implementation of new technologies.

Other control activities are in progress. A sampling of which includes:

Cost estimates: An EM Technology Development review team visited several sites and conducted intensive research to develop a cost-estimating/verification/ and validation guideline that is currently under review.

Schedules: EM Technology Development has developed a cost performance variance analysis report that tracks schedules, and costs. Technology Development tracks these costs and schedules at the contractor work package level. This report is an in-depth analysis of the entire Technology Development program.

EM Technology Development Roadmaps: Strategic and Management Plans exist for each Focus Area. Site Roadmaps, where available, were used as input for technology needs in the process of developing these plans.

TECHNOLOGY DEVELOPMENT FUNDING BY SITES

Mr. Myers. Provide a detailed list by site of all activities and associated funding in the program support budget in fiscal years 1994, 1995 and 1996.

Mr. Grumbly. **Funding by site for fiscal years 1994, 1995, and 1996 is provided below for the record.**

Environmental Management
FY 1996 Congressional Budget Request
Technology Development
($ in Thousands)

SITE	FY 1994 ADJUSTED	FY 1995 ADJUSTED	FY 1996 REQUEST
Albuquerque	$ 1,746	$ 1,791	$ 1,791
Chicago	634	769	769
Idaho	1,111	864	864
Morgantown	875	900	900
Nevada	560	549	549
Ohio	208	219	219
Oakland	1,195	1,297	1,297
Oak Ridge	840	1,139	1,139
Pittsburgh	154	270	270
Rocky Flats	397	490	490
Richland	1,633	1,140	1,140
Savannah River	615	485	485
All Other	27,226	28,141	23,358
TOTAL, Technology Devel.	$37,194	$38,054	$33,271

TECHNOLOGY DEVELOPMENT

Mr. Myers. Why aren't technology development funds allocated to individual offices in the fiscal year 1996 budget since many of the activities are ongoing at a specific site? From a corporate point of view, wouldn't a preliminary allocation allow field offices to plan better for the coming year?

Mr. Grumbly. The specific mission of the technology development program is to provide the best possible environmental management technologies and engineering systems for implementation throughout the DOE sites. Therefore, the Department adopted a highly focused mission-oriented, national program to manage its technology development activities that incorporates the principles of a life-cycle systems approach to minimize duplicative work and accelerate the implementation of cost effective solutions. Currently, the technology development funds are allocated according to needs identified by the established focus areas and are awarded competitively to the implementing entities based on the technical merits and performance record with respect to cost, schedule and ability to implement through a process involving a mid-year program review and peer reviews process. Since the winning proposal for a given technology development activity may involve investigators from multiple sites and private sectors, a direct allocation of technology development funds to the field offices too early in the process would decrease quality of technology development proposals, remove competitiveness, and would also result in duplicative efforts in the field.

CONTINUOUS EMISSION MONITORS

Mr. Myers. Describe the research program on continuous emission monitors including the funding, where the work is done, and project completion date.

Mr. Grumbly. Projects are currently being funded to continuously monitor emissions for: metals, organics, radionuclides and products of incomplete combustion. Reduced costs for sampling and analysis, greater ease in permitting and greater stakeholder acceptance of thermal treatment technologies will be attained through the development of these monitors. The funding for these projects totals $4M. The projects are being developed at Sandia-Livermore, Argonne National Laboratory, Los Alamos National Laboratory, Spectral Sciences Inc., and Mississippi State University. Completion dates range from FY 95 - FY 97. The specific data follow:

$650K Laser Induced Breakdown Spectroscopy, Sandia-Livermore, completion date FY 95

$500K Fourier Transform Infrared Spectroscopy (compliance monitor), Argonne National Laboratory, completion date FY 95

$500K Real Time Alpha Monitor, Los Alamos National Laboratory, completion date FY 96

$400K Laser Diode Sensor (NH3), Sandia-Livermore, completion date FY 95

$396K Mercury monitor, Sandia-Livermore, completion date FY 95

$750K Laser Diode Sensor (products of incomplete combustion), Spectral Sciences Inc. (Burlington, MA), completion date March 1997 (Phase II, Small Business Innovative Research)

$250K Fourier Transform Infrared Spectroscopy (process monitor), Mississippi State University, completion date FY 97

$342K Laser Optogalvanic Spectroscopy, Mississippi State University, completion date FY 97

$213K Laser Induced Breakdown Spectroscopy, Mississippi State University, completion date FY 97

COMPLIANCE AND PROGRAM COORDINATION

Mr. Myers. Describe the training programs currently underway for hazardous materials and hazardous emergency response. What is the cost of each by fiscal year?

Mr. Grumbly. The Office of Environmental Management supports a number of programs for hazardous materials and emergency response. Total funding requested for these activities in Fiscal Year 1996 is $35.3 million, of which $22.5 million is for the Hazardous Materials Management and Emergency Response Facility at the Richland Operations Office.

The Hazardous Waste Operations and Emergency Response training program is conducted by selected grantees through the National Institutes of Environmental Health Sciences that was initiated in Fiscal Year 1994. This initiative is supported by all Environmental Management line programs. Funding provided for this training program includes $10.0 million in Fiscal Year 1994; $10.0 million in Fiscal Year 1995; and an estimate of $10.0 million to be provided on a yearly basis after Fiscal Year 1995.

The Hazardous Materials Management and Emergency Response Facility is currently under construction at the Richland Operations Office and is designed to be a training facility for hazardous materials workers and supporting emergency response personnel. Funding for this project is $13.0 million in Fiscal Year 1995 and is projected at $22.5 million in Fiscal Year 1996.

The Office of Environmental Management also provides and coordinates support for Federal, State, Tribal, and Local governments' hazardous materials response training. Funding for these training programs in Fiscal Year 1995 is $3.2 million, and a request for $2.8 million in Fiscal Year 1996. The hazardous materials training is provided to personnel who will be exposed or potentially exposed to hazardous substances. The training addresses specific hazards and procedures to protect workers from these hazards. The Department of Energy 's workers and responders also are provided with an understanding of the Incident Command System employed by local jurisdictions in response to hazardous materials accidents, including mixed waste. Specific training includes:

Transportation Emergency Preparedness Training: Courses include --
- Transportation Emergency Training for Response Assistance
- Radiological Emergency Training for Local Responders
- Transportation Public Information Training Course

Advanced Hazardous Materials/Radioactive Materials Workshop: This workshop provides the participant with advanced-level training in the shipping of hazardous materials. The main topics addressed are material characterization, proper shipping name determinations, and packaging selection and configuration. A basic review of the hazard communications and load/vehicle configuration requirements is conducted.

Advanced Hazardous Materials/Radioactive Materials/Waste Recertification Workshops: This recertification workshop is targeted to those personnel who have already successfully completed, within the last two years, the Advanced Hazardous Materials Transportation Workshop. The workshops review the Department of Transportation and Environmental Protection Agency transportation regulations with special emphasis on new regulatory amendments/changes.

Advanced Hazardous Waste Transportation: This advanced course targets individuals who share responsibility for complying with Environmental Protection Agency regulations for hazardous waste management and Department of Transportation regulations for the transportation of hazardous wastes. Topics covered include Environmental Protection Agency waste designations, Environmental Protection Agency waste storage requirements, Department of Transportation waste classification, hazardous substance and reportable quantity determination, proper shipping name selection, packaging selection and configuration.

Hazardous Materials Modular Training Program: The program fulfills basic Department of Transportation training requirements addressed in 49 CFR 172 Subpart H.

Department of Transportation/Occupational Safety and Health Administration/Environmental Protection Agency Compliance Training: This workshop identifies the various Federal Acts—Department of Transportation, Occupational Safety and Health Administration, Environmental Protection Agency, including Department of Energy Orders—that have a direct or indirect affect on the transportation of hazardous materials.

International Air Transport Association/ International Civil Air Organizations/ Dangerous Goods Transportation: This advanced course targets individuals who share responsibility for complying with the International Civil Air Organizations requirements, as addressed in the International Air Transport Association regulations, and Department of Transportation Hazardous Material Regulations. Special emphasis is placed on the air transport of radioactive material. Topics addressed include shipper responsibilities, classification of dangerous goods, packaging and shipping determinations, hazard communications, and cargo handling.

Vehicle Inspection for Maintenance Personnel: Instruction is provided to vehicle maintenance personnel who are responsible for ensuring that fleet operated vehicles meet the Federal Motor Carrier Safety Regulations and the criteria of Commercial Vehicle Safety Alliance.

Finally, the Office of Environmental Management has developed a series of cost reimbursable courses. Department of Energy sites which receive the training pay all costs associated with the delivery.

Driver's Training (per 49 CFR Part 177.816), is designed to enhance the knowledge of hazardous materials employees who operate a motor vehicle transporting any quantity of hazardous materials, including those who may already have a Commercial Drivers License.

Radioactive Material Transportation for Drivers and Handlers: This course is specially designed to provide instruction in Department of Transportation regulations for those personnel who only handle and transport radioactive material.

Transportation Management for Procurement/Contract Personnel: This course discusses the vital elements of an efficient transportation logistics program: the freight bill accounting process; proper carrier selection techniques to maximize savings and minimize transit time and general awareness of hazardous materials transportation regulations.

Vehicle Inspection/Load Tie-Down for Drivers and Traffic Personnel: This course instructs the participant in Department of Transportation and the Department's requirements regarding vehicle inspection and load securement.

COMPLIANCE AND PROGRAM COORDINATION COMPARABLE FUNDING

Mr. Myers. At the program activity level of detail, provide comparable funding levels for each activity in fiscal years 1994 and 1995.

Mr. Grumbly. I would like to provide that information for the record.

Environmental Management
Compliance and Program Coordination
Comparable Funding
($ in Thousands)

Compliance and Program Coordination	FY 1994	FY 1995
Quality Assurance, Integration, Quality Improvement, Special Projects	$ 2,947	$ 2,937
Site Coordination	0	385
Environmental Activities	1,881	1,875
Safety and Health	4,514	4,500
Engineering and Cost Management	7,023	7,000
Operations Assessment	1,881	1,875
Emergency Management, Analytical Services, Liaison and Communications	18,589	23,573
HAMMER	8,600	13,000
Program Direction*	11,590	14,032
TOTAL, Compliance & Program Coordination	$57,025	$69,177
Transportation Management		
Transportation Logistics	11,134	9,864
Systems Engineering and Analysis	6,209	8,476
Outreach	1,800	1,800
Management	100	100
Capital Equipment	300	444
TOTAL, Transportation Management	$19,543	$20,684

*113 FTEs in FY 1994; 132 FTEs in FY 1995

DUPLICATION OF EFFORTS

Mr. Myers. There are separate organizations with Department-wide responsibility for health and safety, nuclear safety, safeguards and security, emergency management, and quality assurance. In a time of declining budgets, why does Environmental Management duplicate this resource rather than relying on the expertise of organizations established specifically for this purpose?

Mr. Grumbly. The Assistant Secretary Environment, Safety and Health has no line management responsibility for environment, safety and health performance outcomes. The Department maintains two levels of organizations with responsibility for health and safety, nuclear safety, safeguards and security, emergency planning management, and quality assurance because the corporate level and line management functions support different needs. The Department-wide functions support the independent oversight for the Secretary and the promulgation of general requirements and guidance. The thrust of these general, "corporate level," requirements and guidance is to cover the diverse applications represented throughout the Department. The Department-wide organization, the Office of Environment, Safety and Health, maintains a core of senior personnel with an emphasis on the promulgation of policy and standards (including both requirements and guidance), and oversight of implementation of general, Department wide policies and procedures. The Office of ES&H serves as a direct conduit to the Secretary on the high-level implementation adequacy of all Program Offices.

The Office of Environmental Management (EM) has a nucleus of ES&H expertise in EM-20 to lead EM corporate responses to findings and Recommendations from EH and the DNFSB. EM-20's other primary function is in implementing for EM the policy and guidance promulgated by EH. A parallel example is in EM implementing policy developed by the Office of Emergency Management (NN-60); the Under Secretary's Task Force on Emergency Management, after a lengthy and comprehensive study, concluded that the roles and responsibilities are efficiently and economically distributed between NN-60 and the line organizations. From a different perspective, EM has a unique responsibility for policy development and coordination of the Transportation Emergency Preparedness Program for Department-wide transport of non-classified hazardous material.

EM line management uses "counterpart" organizations in monitoring performance in waste management, clean-up, and facility shut-down as it relates to ensuring nuclear safety, public and occupational safety, security, and preparing for and responding to emergencies on a real-time basis. These organizations also serve as an immediate repose mechanism to assist the EM Offices in developing and implementing solutions to identified issues and tailoring broad requirements and guidance to the specific applications in EM programs. The Office of Environmental Management personnel supporting these functions have more specific experience implementing Standards at an operational level. EM health and safety, nuclear safety, safeguards and security, emergency planning management, and quality assurance functions at the line level are required to support effective management of the program. The increase in EM management performance due to these organizations far outweighs the cost of maintaining these functions by the line.

COMPLIANCE AND PROGRAM COORDINATION

Mr. Myers. Are support service contractors used to perform any activities in this program? If so, please provide a list of all support service contracts including the cost of the contract, the associated full-time employees, the name and purpose of the contract. Provide the average cost per employee for each contract.

Mr. Grumbly. The Office of Environmental Management uses support services contractors to support health and safety, nuclear safety, safeguards and security, emergency management and quality assurance activities, primarily within the Office of Compliance and Program Coordination. A table listing contractors providing support to Environmental Management in these categories for FY 1994 and 1995 to date is attached.

SUPPORT SERVICES CONTRACTORS FUNDED BY ENVIRONMENTAL MANAGEMENT

EM Program	Contract	FY 1994 Funds Obligated	FY 1995 Funds to Date	FY 1995 Funds Projected	FY 1996 Funds Projected	No. of FTE's	Est. Avg. Cost Per FTE	Purpose of Contract
EM-20	Advanced Systems Tech, Inc.	$ 510,000	$ 230,928	$ 385,000	$ 308,000	3	$ 92,372	Management support services to the Office of Quality Assurance/Quality Control for the quality assurance activities.
EM-20	Arinc Research Corp.	$ 62,000	$ 0	$ 0	$ 0	NA	NA	Provide engineering technical services.
EM-20	Arthur D. Little, Inc.	$ 60,000	$ 0	$ 0	$ 0	NA	NA	Technical support services for EM-24, Office of Engineering and Cost Management
EM-20	CC Johnson & Malhotra, PC	$ 1,000,000	$ 0	$ 0	$ 0	NA	NA	Technical and Administrative Support Service for Environmental Management Office of Engineering and Evaluation.
EM-20	COMPA Industries	$ 30,000	$ 50,000	$ 0	$ 0	NA	NA	Technical Support Services for the Office of Safety and Quality Assurance.
EM-20	Digital Systems Research	$ 1,950,000	$ 252,000	$ 1,626,423	$ 896,731	14	$127,801	Technical Support Services for the Office of Operations Assessment.
EM-20	Energetics, Inc.	$ 250,000	$ 0	$ 0	$ 0	NA	NA	Technical, Analytical and Administrative Support Services for Environment, Safety and Health.
EM-20	Gram, Inc.	$ 600,000	$ 450,000	$ 485,000	$ 450,000	5	$ 90,000	Technical Support Services for EM-24.
EM-20	Hazardous & Medical Waste Svs.	$ 1,287,212	$ 0	$ 937,500	$ 775,288	8	$125,000	Technical and Administrative Support Services to the Office of Environmental Oversight (EM-22).
EM-20	Mele Assoc.	$ 250,000	$ 500,000	$ 520,000	$ 520,000	5	$100,000	Analytical Engineering and Administrative Support Services.
EM-20	Parallax, Inc.		$ 1,000,000	$ 1,500,000	$ 1,500,000	10	$100,000	Safety and Health Support Services for the Office of Safety and Health Oversight.
EM-20	Sociotechnical Research Appl.	$ 692,000	$ 0	$ 937,500	$ 850,000	9	$ 81,411	Technical Support Services to the Office of Quality Assurance.

NA - Represents contract termination or minimal use of contract not sponsored by Environmental Management.

TRANSPORTATION MANAGEMENT PROGRAM

Mr. Myers. Since the Department of Transportation and the Nuclear Regulatory Commission establish policies and regulate transportation of radioactive materials shipments, and private companies transport DOE radioactive materials shipments, why does DOE spend $16 million a year on transportation management programs?

Mr. Grumbly. The Department of Transportation and the Nuclear Regulatory Commission are regulatory agencies, while we are a shipper of materials. The Department of Energy complies with the requirements established by the Department of Transportation, the Nuclear Regulatory Commission, the Environmental Protection Agency, and the Occupational Safety and Health Administration. The Department of Energy has safely transported one million tons of hazardous materials in 140,000 shipments since 1989, and is the largest shipper of radioactive materials in the United States.

The Department of Energy needs to control its hazardous materials transportation as part of its responsibilities under environmental compliance statutes. We also must coordinate with a wide range of stakeholders, including corridor States and Tribes, who are concerned with our shipments.

The funding requested for transportation management will be used to: establish transportation and packaging standards and practices across the Department; conduct transportation risk studies and analyses to support decisions subject to the National Environmental Policy Act; integrate information about Department of Energy shipments to ensure operational efficiencies and improve performance (such as making sure that the lowest-cost, qualified shipper is selected, trucks are full and the number of shipments are limited to the greatest extent possible); provide training required by regulation to our staff and contractors involved with transportation of hazardous materials; provide assistance to our sites on actions needed to comply with laws and regulations; support the development of new technology to promote the safe and secure packaging and transportation of radioactive materials; and provide forums for stakeholder involvement in the Department's transportation activities.

ANALYSIS, EDUCATION AND RISK ASSESSMENT

Mr. Myers. What is the size of the public affairs office maintained by each DOE operations, field, area, site, or support office outside of Washington?

Mr. Grumbly. The following list of DOE locations and respective contractors is shown in a table which I would like to insert in the record. Note that in some instances, small activity offices are spread across a wide physical area. Contractors define the public affairs function in the broadest sense; that is, activities which relate to communications across the spectrum of all available "publics" -- advocacy groups, business leaders, company employees, elected officials, reporters, and the general public. The functions performed by public affairs people must, therefore, range across a similarly all-encompassing arena. This work includes: public participation activities as required by NEPA and CERLA, site specific advisory boards, tours, public reading rooms, visitors centers, economic development groups, educational outreach projects, internal newsletters and meetings, publications review, presentation and photo support, emergency response information, media inquiries, public inquiries, and speech writing. Since all offices are configured the same, these numbers do not include various museum staffs or freedom of Information Act administrators.

SITE OF PUBLIC AFFAIRS OFFICE AT EACH SITE

(for the record)

Albuquerque		
Carlsbad area	36	
Dayton	1	
Grand Junction	2	
Kansas City	1	(counted just media relations)
Los Alamos	19	
Mound	2	
Pantex	22	
Pinellas	3	
Sandia	14	
UMTRA Project	6	
Chicago		
Ames Lab	7	
Argonne Lab	14	
Brookhaven Lab	14	
Fermi Lab	5	
Princeton Lab	1	
Fernald		
FERMCO	1	
Golden		
Nat'l Energy Lab	9	
Idaho		
EG&G	18	
Westinghouse	5	
PTI	2	
Nevada		
EG&G	5	
Raytheon	2	
Reynolds	1	
Weldon Springs	4	
Oakland		
Energy Tech Center	1	
Lawrence Berkeley	6	
Lawrence Livermore	15	
Stanford Accelerator	2	

Richland		
	Environmental Health Foundation	1
	Kaiser	3
	Pacific Northwest Lab	11
	Westinghouse	29
Rocky Flats		
	EG&G	32
Savannah River		
	Savannah River Ecology Lab	1
	Wackenhut	2
	Westinghouse	35

Albuquerque	11 (does not include museum staff)
Chicago	5
Fernald	3
Golden	2
Idaho	8
Nevada	6
Oak Ridge	5
Oakland	3
Richland	8
Rocky Flats	12
Savannah River	9 (includes 2 Forest Service people)

EDUCATION PROGRAMS

Mr. Myers. Describe the education programs by institution including funding in fiscal years 1994, 1995, and 1996.

Mr. Grumbly. In FY 1994, the program focus was on building the technical environmental infrastructure where none existed within the academic community. Increasing needs for technical environmental professionals and technicians were projected. Activities were directed toward attracting students and supporting them in technical environmental programs.

For FY 1995 and beyond, the program focus has shifted to reflect changing needs and issues within EM. The program is designed to meet technical EM work force needs associated with health and safety concerns, work force restructuring, contract reform, and EM worker certification. The program now in place is being redirected to focus on emerging EM work force competency issues. This program is NOT focused on outreach or community support programs.

The attached charts provide descriptions of our education programs.

EM Academic Services Program

Institution	Program Description	FY 1994	FY 1995	FY 1996	FY 1997
Historically Black Colleges and Universities/Minority Institutions (HBCU/MI) Consortium	The HBCU/MI Consortium utilizes the combined facilities, human resources and expertise of the 17 member institutions to expand the nation's research, education, technology development and transfer capabilities in both the public and private sectors in pollution prevention and waste management technologies. Cooperative agreement funding by consortium institutions is shown in an attached table.	5.5M	6.7M	-0-	-0-
Waste Management Education Research Consortium (WERC)	WERC has established an infrastructure of colleges and universities in New Mexico to develop programs in education, technology development and technology applications to address issues related to the management of waste and the environment. Cooperative agreement funding by consortium institutions is shown in an attached table.	5.5M	3.7M	-0-	-0-
Partnership for Environmental Technology Education (PETE)	PETE is a non-profit public private partnership designed to promote the development of quality environmental education and training programs, work force development and the dissemination of advanced environmental technology through community and technical colleges. With the primary support of DOE, EPA, NSF and private industry, PETE has evolved into a national network of 6 regional partnerships with over 460 participating colleges serving all 50 states, Puerto Rico, and the US territories.	0.5M	-0-	-0-	-0-
South Carolina Universities Research and Education Foundation (SCUREF)	SCUREF is a not-for-profit consortium of universities formed to enhance and leverage the capabilities of its participating research universities. In general, the programs funded under this cooperative agreement are directed toward the public sector to provide for current and future needs of DOE in areas of environmental restoration and waste management. Cooperative agreement funding by consortium institutions is shown in an attached table.	2.0M	2.9M	2.9M*	2.9M*
Wilbur Wright College	Develop and implement educational programs for environmental technicians.	0.2M	0.6M	0.7M	-0-
Environmental Restoration and Waste Management - Employment Program (ERWM-EP)	Student support program designed to recruit students for entry level positions in ER/WM.	1.0M	1.0M	-0-	-0-
Community College Network (C^2NET)	Provide DOE access to and communication with the community colleges associated with DOE facilities to enable the development of curriculum in support of DOE's work force needs.	.05M	-0-	-0-	-0-
Academic Services Program for Emerging Work Force Issues	This program was created to handle EM workforce education requirements arising from health and safety concerns (DNFSB), EM work force restructuring, EM contract reform, and EM worker certification by using the EM-developed educational programs listed above	-0-	-0-	5.0M	5.0M
TOTAL		14.7M	14.9M	5.7M	5.0M

Education portion unbudgeted - last two years of a five year cooperative agreement.

HBCU/MI FUNDING BY INSTITUTION

	FY94		FY95		FY96	
Texas A&M	$	152,396	$	154,414	$	-0-
Xavier	$	125,565	$	125,585	$	-0-
University of Texas, El Paso	$	129,424	$	126,859	$	-0-
Jackson State	$	138,964	$	138,816	$	-0-
Howard University	$	110,609	$	106,812	$	-0-
North Carolina A&T	$	137,712	$	138,667	$	-0-
New Mexico Highlands	$	128,114	$	131,126	$	-0-
Hampton	$	145,975	$	134,448	$	-0-
Alabama A&M	$	145,227	$	148,220	$	-0-
Southern	$	138,659	$	137,781	$	-0-
Prairie View A&M	$	137,577	$	135,126	$	-0-
Florida A&M	$	160,132	$	166,543	$	-0-
Northern Arizona	$	123,211	$	127,262	$	-0-
Clark Atlanta	$	156,449	$	140,577	$	-0-
Tuskegee	$	124,389	$	121,434	$	-0-
Texas Southern	$	174,020	$	183,841	$	-0-
Florida International	$	125,948	$	131,612	$	-0-
BTI (Contractor)	$	213,251	$	161,842	$	-0-
Consortium HQ	$	870,726	$	896,090	$	-0-
AWU (Contractor)	$	1,731,339	$	2,026,428	$	-0-
TOTALS	$	5,169,687	$	5,433,483	$	-0-

WERC FUNDING BY INSTITUTION

	FY94	FY95	FY96
New Mexico State University	$ 1,833,000	$ 1,233,000	$ -0-
New Mexico Institute of Mining and Technology	$ 1,833,000	$ 1,233,000	$ -0-
University of New Mexico	$ 1,833,000	$ 1,234,000	$ -0-
TOTALS	$ 5,499,000	$ 3,700,000	$ -0-

DOE/SCUREF COOPERATIVE AGREEMENT

	FY94	FY95	FY96
Clemson University	$ 990,000	$ 1,455,000	$ TBD
Medical University of South Carolina	$ 356,000	$ 277,000	$ TBD
South Carolina State University	$ 166,000	$ 203,000	$ TBD
University of South Carolina	$ 600,000	$ 865,000	$ TBD
TOTALS	$ 2,112,000	$ 2,800,000	$ 2,900,000

ANALYSIS, EDUCATION AND RISK MANAGEMENT

Mr. Myers. Please provide the activity breakout of this program with comparable funding levels for fiscal years 1994, 1995, and 1996.

Mr. Grumbly. I would be pleased to provide that answer for the record.

Environmental Management
FY 1996 Congressional Request
Analysis, Education, and Risk Management
(Dollars in Thousands)

	FY 1994		FY 1995		FY 1996
	Non-Comparable	Comparable	Non-Comparable	Comparable	
Administrative Services	$ 71,460	$ 86,019	$ 64,620	$ 74,206	$ 92,122
Integrated Risk Management	0	8,144	0	23,900	32,400
Public Accountability	2,190	4,105	1,575	3,531	32,500
Oversight and Self Assessment	18,246	0	18,753	0	0
TOTAL	$91,896	$98,268	$84,948	$101,637	$157,022

ANALYSIS, EDUCATION AND RISK ASSESSMENT

Mr. Myers. How is the technical training program of this office coordinated with the technical training programs administered by the Office of Human Resources and Administration.

Mr. Grumbly. The Environmental Management (EM) Training and Education Division works closely with the Office of Human Resources and Administration (HR) to ensure that the technical training and qualification programs are developed and administered efficiently, and without duplication of effort, for the benefit of all DOE Federal employees. Examples of coordination between the two offices include:

1. In early 1994, my office identified the need for better project management within EM and the need to improve the existing training for project managers. The EM Training and Education Division worked with HR to identify existing project management courses to be strengthened, and to identify new courses needed to provide the necessary skills and knowledge. The needed course development work was divided between the two offices. The offices shared course outlines and technical content and worked together to make needed revisions. The 3 newly revised project management courses and 3 new profit management courses (Project Planning; Cost and Scheduling, Estimation and Analysis; and Project Execution) will come on line this Spring. The courses developed by EM will be turned over to HR to administer and conduct.

2. The EM Training and Education Director is a member of the Technical Personnel Coordinating Committee (TPCC) chaired by HR. The TPCC facilitates intra-site and inter-site communications, coordinates initiatives, shares lessons learned and resources, and coordinates the Department's initiative for professional development of Federal employees. This includes sharing procedures used in training, development, education, experience and qualification programs.

3. EM works closely with HR to develop needed Federal employee training and qualification program guidance documents and to implement the programs. This past year, EM has:

   a. Helped author the "Professional Development of Federal Technical Personnel" document (June, 1994).

   b. Commented on the rewrite of Order 3410.1X "Training," and the Technical Base Qualification Program standard.

   c. Collaborated with HR to develop three EM Technical Qualification Program Standards (Environmental Restoration, Environmental Compliance, and Waste Management) which will soon be released to the field.

d. Provided subject matter expertise to help develop many of the other qualification standards developed by HR in late 1994.

4. With HR's approval and support, EM developed the Technical Qualification Program Implementation Guideline manual with help from HR and the field.

5. EM is identifying (developing only where necessary) technical courses in the complex that support EM's technical mission and can be used effectively to train personnel at two or more locations. The Training and Education Office is verifying the validity and applicability of these EM-specific training materials. Descriptions will be prepared for selected courses and forwarded to HR for entry into the Agency Course Catalog for potential use by all applicable field components.

INTEGRATED RISK MANAGEMENT

Mr. Myers. For the Integrated Risk Management program, please identify financial assistance and grants to specific institutions in fiscal years 1994, 1995 and 1996.

Mr. Grumbly. The Integrated Risk Management program includes those efforts within the Environmental Management program which develop policy, requirements and guidance to ensure that risk analysis theory and processes are integrated into coherent decision making processes. The goals of these processes must be to meet Departmental missions while protecting public health, worker health and safety, ecosystem viability, and cultural and natural resources through integrated risk analysis practices addressing technical, legal and social elements.

In the beginning of FY1995, the process of consolidating these policy and guidance efforts began with the formation of the Office of Integrated Risk Management. These efforts include financial assistance and grants to several universities and other organizations. Specific risk assessment activities required under specific statutes within the Environmental Management program are not considered as part of the Integrated Risk Management program; they reside within the appropriate program office or field office.

On April 6, 1994, DOE published a Notice of Program Interest (NOPI) in the *Federal Register* seeking to award grants or cooperative agreements with organizations to develop credible processes and methods to support environmental management decision making, with funding available starting in FY 1995. The specific assistance sought was to: identify on a site-by-site basis, the risks to human health and the environment; identify data gaps and uncertainties, and then methods for filling or reducing them; recommend processes by which identified risks can be reduced; recommend how public participation should be involved in risk evaluation and how such risks should be communicated to non-technical audiences; and review and define the costs for risk reduction. Awards will be granted in June 1995.

Integrated Risk Management Program

FY 1994, 1995, and 1996 Financial Assistance and Grants

(Dollars in millions)

Institution	FY1994	FY1995	FY1996
Consortium for Environmental Risk Evaluation: • Clark University, MA • Community College of Denver, CO • Duke University, NC • Heritage College, WA • Idaho State • Illnois Institute of Technology • Knoxville College, TN • Medical universtity of South Carolina • South Carolina State University • Texas Southern University • Tulane University, LA • University of Florida • University of Cincinnati, OH • University of South Carolina • University of Colorodo • University of New Orleans, LA • University of Tennessee • Washington State University • Xavier University, LA	3.0	5.8	
Consortium for Risk Evaluation & Stakeholder Participation: • University of Washington School of Public Health • Rutgers University, NJ • University of Medicine and Dentistry of New Jersey • Institute for Evaluating Health Risks, DC		1.0	7.0
University of Nevada at Los Vegas Harry Reid Center		1.0	1.6
Medical University of South Carolina (MUSC)	6.6	6.4	6.7
To be awarded in early 1995 (NOPI) (Specific organizations cannot be identified until awards are granted.)		4.0	3.9
Total	9.6	18.2	19.2

HEALTH STUDIES CURRICULA

Mr. Myers. Please describe the Health Studies Curricula.

Mr. Grumbly. The Office of Environmental Management supports the development of environmental health curricula via a grant with the Medical University of South Carolina (MUSC) and its Environmental Hazards Assessment Program. The purpose of the grant is to develop a basis for risk assessment, management, and communication which recognizes the impact of the environmental hazardous on human health and well-being; to develop a pool of trained scientists and experts in cleanup activities, especially in human health aspects; and to develop programs which address the shortage of technical and scientific experts trained in the health aspects of environmental restoration and waste management.

Under the grant, the university will receive $6.4 million from the Office of Integrated Risk Management in FY 1995. Approximately $1.1 million of this funding is for the environmental health curricula. These curricula consist of a Ph.D. program and a Master of Science program. The Ph.D. program in Biometry and epidemiology emphasizes Environmental Risk Assessment, drawing expertise from basic science and policy departments at MISC and the University of Charleston. Also in cooperation with the University of Charleston, the master of Science degree program in Environmental Studies prepares students for the interdisciplinary nature of environmental hazards and their remediation.

NATIVE AMERICAN ORGANIZATIONS

Mr. Myers. The Fiscal Year 1996 budget request includes $16.3 million for grants to Native American organizations. Please describe this program.

Mr. Grumbly. To assist the Environmental Management program (EM) in its decisionmaking processes and activities, EM provides funding to American Indian nations through cooperative agreements. Such funding is based on the special legal relationship which exists between American Indian nations and the Federal Government as defined by history, treaties, statutes, court decisions, and the U.S. Constitution. Although the Department of Interior, through the Bureau of Indian Affairs, has the principle trust responsibility for upholding obligations of the Federal government to American Indians, this trust responsibility extends to all federal agencies. The Department is committed to upholding its trust responsibility by ensuring that health impacts to tribes from activities at DOE sites are addressed and tribal rights related to cultural and natural resources appropriately protected. We believe that these programs are not only necessary to fulfilling these legal and moral obligations, but they help improve the planning of the EM program resulting in more timely and cost-effective decisions.

Many of the Department's EM sites are located adjacent or in close proximity to tribal reservations. The tribes around DOE sites include the: Navajo Nation, Seneca Nation of Indians, Nez Perce Tribe, Yakama Indian Nation, Confederated Tribes of the Umatilla Indian Reservation, Shoshone-Bannock Tribes, and the Pueblos of San Ildefonso, Santa Clara, Cochiti, Jemez, Isleta, Nambe, and Sandia.

The EM budget for tribal involvement is comprised of three primary elements: core funding ($10.05 million), pilot projects ($3.8 million) and support for pan-tribal organizations ($2.5 million).

The Department is committed to providing funding for core environmental programs at the tribal level to ensure adequate tribal involvement in the Department's decision-making processes. Core funding allows affected Indian nations around Department sites and facilities to comment on an array of environmental reports, impact statements, and other related documents that effect decisionmaking at a DOE site. Such input from Tribal nations assists the EM program in making cost-effective decisions related to remediation. Additionally, core funding allows tribal governments to develop activities in conjunction with DOE sites to address health, safety and cultural issues of concern.

As a complement to establishing core environmental capacity, the Department is working with some tribal nations to establish one-year pilot projects that assist EM in its priority activities. These pilots, as a byproduct, help build economic capacity and cultural integrity as mandated by a Federal trust responsibility. The current pilot projects include:

UMATILLA $350,000 (Continuation of Pilot/Phase II)
The Confederated Tribe of the Umatilla Indian Reservation is crossed by I-84

which is a major transportation route for DOE hazardous and nuclear wastes. The tribe has developed a project in emergency response and preparedness whereby the tribe would be a "first responder"

YAKAMA $350,000
The Department is continuing to fund the Yakama Indian Nation to use the abandoned K-basins of the Hanford site for breeding pens for chinook salmon to be released into the Columbia River. This project is turning useless infrastructure into an enterprise that will not only benefit the tribe but also the economy of those dependent, both tribal and nontribal, for their livelihood upon the Columbia River and the entire economy of the Northwest.

SHOSHONE-BANNOCKS $500,000
The Department is continuing to fund a pilot project whereby the tribe is working with the Idaho National Engineering Laboratory to develop a comprehensive Cultural Resource Management Plan for the tribe and the Department. This is due to that fact that a large number of cultural sites and sacred regions of the Shoshone-Bannocks are located within the confines of the Idaho National Engineering Laboratory.

NEZ PERCE $333,000
In FY 1996, the Department continues to help fund the EMSL Restoration Project for Phase IV completion. This project serves as a continuing source of information and plant species for remediation at the DOE Hanford site. The Hanford tribes have succeeded in restoring a habitat for the native plants destroyed by DOE activities.

PUEBLOS OF COCHITI, SAN ILDEFONSO, SANTA CLARA AND JEMEZ $600,000
The four Pueblos seek to work with the Department of Energy, Interior and the State of New Mexico to carry out a pilot project that would assess the adverse health effects that contaminants from Los Alamos National Laboratory have had on their migratory herds of elk and deer. The Pueblos are dependant on these herds for food, religious ceremonies, and income from hunting permits to non-tribal members. The activity would be conducted in coordination with the Laboratory's ongoing survey project.

The third aspect of EM funding for Native American organizations is to provide minimum funding to Pan-Tribal organizations to assist the Department in coordinating activities with Indian nations and maximizing EM's outreach efforts to tribes under Executive Order 12898 for Environmental Justice. These organizations include the National Congress of American Indians (NCAI), the National Tribal Environmental Council (NTEC), the Council of Energy Resource Tribes (CERT), Americans for Indian Opportunity (AIO), Orbis, and the American Indian Science and Engineering Society (AISES).

Each tribal government that is working with the Department on pilot projects has committed to sharing the information and the expertise they have acquired in Fiscal Year 1995 with other tribes that have interests and concerns in these areas. Tribal organizations will work to facilitate the sharing of information and leveraging other non DOE resources to assist in the projects.

ANALYSIS, EDUCATION AND RISK ASSESSMENT

Mr. Myers: What were comparable funding levels in fiscal years 1994 and 1995?

Mr. Grumbly: The comparable funding levels in FY 1994, 1995, and 1996 are as follows:

	Proposed FY 96	FY 1995	FY 1994
Core Funding:	$10.0 million	$ 6.8 million	$3.3 million
Projects:	3.8 million	2.4 million	500 K
Organizations:	2.5 million	1.4 million	200 K
Total:	$16.3 million	$10.5 million	$4.0 million

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Mr. Myers. What are the anticipated funding requirements beyond 1996?

Mr. Grumbly. The Department anticipates that tribal funding beyond FY 1996 will be based on a twenty percent (20%) reduction from the FY 1996 request of $16.3 million. FY 1996 tribal funding represents the inclusion of nearly all of the Indian nations that are affected by DOE EM activities and the amounts necessary for the Department to fulfill its legal obligation pursuant to Federal trust responsibility.

Outyear funding requirements for tribal involvement will not require increases due to the fact that start-up expenses related to initial core tribal capacity building will have been completed.

PROGRAM SUPPORT ACTIVITIES

Mr. Myers. Please provide a listing of all FTEs funded by Environmental Management at Headquarters and at each field office is fiscal years 1994, 1995, and 1996. Identify which EM program is paying for the FTEs.

Mr. Grumbly. The attached chart provides a listing of all FTEs funded by EM at both Headquarters and field. The increase in the number of FTEs at Headquarters and in the field in FY 1995 is due to EM's request for additional FTEs as part of a pilot program under the Government Performance & Results Act. OMB authorized 1600 additional FTEs for EM to enable EM to meet commitments made for productivity increases and greater managerial control of our contractors.

EM allocated 850 positions to the field through a competitive bid process. Field offices submitted proposals indicating how many FTEs they needed and the funds they could save through productivity increases and improved managerial control.

The Office of Environment, Safety and Health received 100 FTEs in order to support the Department's cleanup goals. Thirty FTEs were given to other Headquarters offices, such as General Counsel and Field Management, to enable them to provide increased support to EM. EM Headquarters received 170 additional FTEs and 50 FTEs were provided to the Secretary of Energy for Departmental streamlining purposes.

EM has received 400 additional FTEs from OMB for distribution to the field in FY 1996, but has not yet allocated these positions.

In FY 1996, EM will receive 411 FTEs from Defense Programs (DP): 39 FTEs for Mound will transfer to the Ohio Field Office and 372 DP FTEs will transfer to the EM program at Savannah River.

Prepared by: EM-131
April 4, 1995

EM FTE CEILING

Field Office	FY 1994 Actual FTE Usage						FY 1995						FY 1996						
	EM 10/20	EM-30	EM-40	EM-50	EM-60	TOTAL	EM 10/20	EM-30	EM-40	EM-50	EM-60	TOTAL	EM 1-10	EM-20	EM-30	EM-40	EM-50	EM-60	TOTAL
HQ	203	158	128	93	51	633	383	168	149	72	81	853	313	109	147	130	63	72	834
Worker & Community Transition	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	5	5	-----	-----	-----	-----	-----	-----	-----
Albuquerque	-----	60	60	15	-----	135	-----	128	104	19	-----	251	-----	1	133	104	18	-----	256
Chicago	-----	11	14	4	-----	29	-----	22	36	5	1	64	-----	1	22	39	4	1	67
Idaho	-----	149	34	13	71	267	-----	146	35	14	80	275	-----	33	147	35	13	48	276
Morgantown	-----	-----	-----	10	-----	10	-----	-----	-----	14	-----	14	-----	-----	-----	-----	14	-----	14
Nevada	-----	12	15	10	-----	37	-----	24	32	9	-----	65	-----	1	24	34	8	-----	67
Oakland	-----	25	19	4	-----	48	-----	43	40	4	-----	87	-----	1	43	43	3	-----	90
Ohio	-----	-----	77	-----	-----	77	-----	52	124	-----	30	206	-----	1	61	147	-----	36	245
Oak Ridge	-----	26	73	6	-----	105	-----	54	117	10	-----	181	-----	1	57	122	9	-----	189
Pittsburgh	-----	-----	-----	-----	-----	-----	-----	-----	-----	2	-----	2	-----	-----	-----	-----	2	-----	2
Rocky Flats	-----	18	11	5	157	191	-----	32	40	3	223	298	-----	-----	32	40	3	227	302
Richland	-----	142	26	6	259	433	-----	219	41	9	304	573	-----	1	220	41	8	303	573
Savannah River	-----	78	22	2	-----	102	-----	173	51	2	-----	226	-----	-----	176	51	2	372	601
Pilot Program	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	400
Sub-Total	-----	521	351	75	487	1,434	-----	893	620	91	638	2,242	-----	40	915	656	84	987	3,082
TOTAL	203	679	479	168	538	2,067	383	1,061	769	163	724	3,100	313	149	1,062	786	147	1,059	3,916

The number of FTEs in the field increases approximately 56% between FY 1994 and FY 1995 due to the Bid Process FTEs allocated through OMB's GPRA Pilot Program. EM FTEs increase by 26% in FY 1996 because of the last 400 FTEs from OMB in the GPRA Pilot Program and because of the 411 FTE transfers from Defense Programs to EM at Ohio and Savannah River.

PROGRAM SUPPORT ACTIVITIES

Mr. Myers. For each program organization at Headquarters and for each field office which received EM funding, please provide a list of all support service contracts including the cost of the contract, the associated full-time employees, the name and purpose of the contract. Provide the average cost per employee for each contract. Please provide this information for fiscal years 1994, 1995, and 1996.

Mr. Grumbly. The attached table shows actual obligations for FY 1994 and FY 1995 to date for Headquarters support services contracts.

These numbers for support service contracts are expected to be reduced in FY 1995, 1996, and 1997 as the Department implements its contract Reform Team's recommendation to reduce support service contracting by at least 10 percent in these years.

SUPPORT SERVICES CONTRACTORS FUNDED BY ENVIRONMENTAL MANAGEMENT

EM Program	Contract	FY 1994 Funds Obligated	FY 1995 Funds to Date	FY 1995 Funds Projected	FY 1996 Funds Projected	No. of FTE's	Est. Avg. Cost Per FTE	Purpose of Contract
EM-20	Advanced Systems Tech, Inc.	$ 510,000	$ 230,928	$ 385,000	$ 308,000	3	$ 92,372	Management support services to the Office of Quality Assurance/Quality Control for the quality assurance activities.
EM-10	Am Pro Protective Agency, Inc.	$ 1,200	$ 0	$ 0	$ 0	NA	NA	Security Protective Force Support Services.
EM-20	Arinc Research Corp.	$ 62,000	$ 0	$ 0	$ 0	NA	NA	Provide engineering technical services.
EM-20	Arthur D. Little, Inc.	$ 60,000	$ 0	$ 0	$ 0	NA	NA	Technical support services for EM-24, Office of Engineering and Cost Management
EM-30	BDM Corporation	$40,291,268	$15,235,000	$23,074,718	$22,100,000	170	$130,000	Technical Support Services to the Office of Waste Management
EM-40	Booz, Allen, Hamilton	$21,957,920	$ 5,000,000	$16,500,000	$16,450,000	127	$ 93,000	Provide Technical, analytical and administrative support to the Office of Environmental Restoration.
EM-1	Booz, Allen, Hamilton	$ 28,000	$ 0	$ 0	$ 0	NA	NA	Management support services for the DOE Office of Administration and Human Resources Management.
EM-28	CC Johnson & Malhotra, PC	$ 1,000,000	$ 0	$ 0	$ 0	NA	NA	Technical and Administrative Support Service for Environmental Management Office of Engineering and Evaluation.
EM-30	Cadmus	$ 1,630,000	$ 825,282	$ 825,252	$ 1,100,000	10	$110,000	Technical, Analytical and Administrative Support Services.
EM-40	Camber Corp	$ 1,200,000	$ 0	$ 600,000	$ 600,000	6	$100,000	Project Tracking System Support.
EM-1-60	Capstone Corporation	$ 2,100,000	$ 2,468,247	$ 1,500,000	$ 0	62	$ 54,080	Technical, Administrative and Temporary Clerical Services.
EM-10	Coleman Research Corporation	$24,941,063	$ 20,758,327	$31,559,643	$30,000,000	191	$108,680	Technical and Programmatic Support Services for the Office of Management and Finance.
EM-20	COMPA Industries	$ 30,000	$ 50,000	$ 0	$ 0	NA	NA	Technical Support Services for the Office of Safety and Quality Assurance.
EM-10	Comprehensive Tech Intern. Inc.	$ 200,000	$ 0	$ 0	$ 0	NA	NA	Information Systems Support.

EM Program	Contract	FY 1994 Funds Obligated	FY 1995 Funds to Date	FY 1995 Funds Projected	FY 1996 Funds Projected	Est. No. of FTE's	Est. Avg. Cost Per FTE	Purpose of Contract
EM-10	Computer Data Systems, Inc.	$ 3,286,682	$ 641,304	$ 801,304	$ 160,000	2	$160,000	Management Information and Telecommunications Support Services.
EM-10	Coopers and Lybrand	$ 174,380	$ 2,583	$ 0	$ 0	NA	NA	Deliver TQM Implementation Services and Training.
	Decision Analysis Corp. of VA	$ 21,200	$ 0	$ 0	$ 0	NA	NA	Economic Analysis and Modeling and forecasting.
EM-20	Digital Systems Research	$ 1,950,000	$ 252,000	$ 1,626,423	$ 896,731	14	$127,801	Technical Support Services for the Office of Operations Assessment.
EM-20	Energetics, Inc.	$ 250,000	$ 0	$ 0	$ 0	NA	NA	Technical, Analytical and Administrative Support Services for Environment, Safety and Health.
EM-1-60	Facilities Management Company	$ 4,323,760	$ 38,527	$ 0	$ 0	NA	NA	Temporary Help Services.
EM-10	GEM Technology, Inc.	$ 200,000	$ 1,000,000	$ 1,100,000	$ 1,100,000	8	$137,500	Technical and Administrative Support Services for the Environmental Management Office of Safeguards.
EM-20	Gram, Inc.	$ 600,000	$ 450,000	$ 485,000	$ 450,000	5	$ 90,000	Technical Support Services for EM-24.
EM-20	Hazardous & Medical Waste Svs.	$ 1,287,212	$ 0	$ 937,500	$ 775,288	8	$125,000	Technical and Administrative Support Services to the Office of Environmental Oversight (EM-22).
EM-40	IDR	$ 0	$ 500,000	$ 500,000	$ 600,000	6	$100,000	Program integration support.
EM-10	Internet Services	$ 17,486	$ 14,995	$ 0	$ 0	NA	NA	DOE Library Services.
EM-60	Jupiter Corp.	$ 1,508,194	$ 405,000	$ 529,000	$ 1,440,000	10	$150,000	Technical support services to the Office of Transition and Management.
EM-10	Leads Corp.	$ 4,050	$ 0	$ 0	$ 0	NA	NA	Deliver TQM Consulting, Implementation & Training.
EM-20	Mele Assoc.	$ 250,000	$ 500,000	$ 520,000	$ 520,000	5	$100,000	Analytical Engineering and Administrative Support Services.
EM-10	MJG, Inc.	$ 113,000	$ 0	$ 0	$ 0	NA	NA	Technical and analytical support.
EM-10	Orkand Corp.	$ 4,850	$ 0	$ 0	$ 0	NA	NA	Operations and Systems Support.
EM-50	PAR Enterprises, Inc.	$ 95,198	$ 0	$ 0	$ 0	NA	NA	Technical Support.
EM-20	Parallax, Inc.		$ 1,000,000	$ 1,500,000	$ 1,500,000	10	$100,000	Safety and Health Support Services for the Office of Safety and Health Oversight.
EM-50	Research Management Consultants	$ 287,000	$ 0	$ 0	$ 0	NA	NA	Provide support for Energy Technology Visuals.

EM Program	Contract	FY 1994 Funds Obligated	FY 1995 Funds to Date	FY 1995 Funds Projected	FY 1996 Funds Projected	Est. No. of FTE's	Est. Avg. Cost Per FTE	Purpose of Contract
EM-10	Schmeltzer Aptaker & Shepard	$ 1,023,485	$ 0	$ 0	$ 0	NA	NA	Legal Support for Labor Relations.
EM-10	Scientech, Inc.	$ 690,000	$ 959,000	$ 1,504,000	$ 1,500,000	8	$127,877	Technical, Analytical and Administrative Support.
EM-20	Sociotechnical Research Appl.	$ 692,000	$ 0	$ 937,500	$ 850,000	9	$ 81,411	Technical Support Services to the Office of Quality Assurance.
EM-10	Systematic Management Services	$ 212,290	$ 0	$ 0	$ 0	NA	NA	Specialized technical, analytical and Administrative services for Defense Programs.
EM-10	Systems Flow, Inc.	$ 2,856,010	$ 939,000	$ 1,705,443	$ 1,600,000	15	$ 93,898	Technical and Administrative Services.
EM-10	Vista Technology, Inc.	$ 100,000	$ 0	$ 0	$ 0	NA	NA	Develop Department of Energy Training Programs.
EM-50	Waste Policy Institute	$21,876,157	$16,500,000	$21,600,000	$15,500,000	110	$127,000	Provide Support Services for the Office of Technology Development.

NA - Represents contract termination or minimal use of contract not sponsored by Environmental Management.

FEDERAL SALARIES

Mr. Myers. Are the salaries for federal FTE's paid from the Energy, Supply, Research and Development or Uranium Enrichment D&D accounts?

Mr. Grumbly. No salaries for federal FTE's are paid from the Energy Supply, Research and Development, or Uranium Enrichment D&D accounts. Salaries for federal FTE's which provide direct support for tasks being funded from the Uranium Enrichment D&D account are provided under the Defense Environmental Restoration and Waste Management appropriation.

URANIUM ENRICHMENT D&D FUND

Mr. Myers. Please discuss the need for the proposed foreign fee language.

Mr. Grumbly. The foreign fee language is included to support an administration proposal to collect fees from foreign utilities similar to the D&D Fund assessment that is being collected from domestic utilities. The domestic utility assessment is based on the uranium enrichment services purchased from the Department. The proposal would assess foreign to cover enrichment services which they purchased. Foreign utilities represent approximately twenty-four percent of the total purchased from the Department.

Mr. Myers. Why has the Department proposed to pay into the fund in excess of the cleanup cost for fiscal year 1996?

Mr. Grumbly. The Energy Policy Act of 1992 requires the Department to collect $480 million annually, adjusted for inflation, for deposit into the Uranium Enrichment D&D Fund. The collection is to be derived from two sources: up to $150 million from domestic utilities based on the ratio of their purchases of enrichment services to the total number purchased from the Department for all purposes and the remainder is to come from appropriations. The Department has requested an amount sufficient to pay the Government contribution to the fund. The workscope for the D&D Fund in the FY 1996 Congressional request totals $288.8M which is made up of the following: Remedial Action $166.3M; D&D $68.1M; Landlord $8.4M; Compliance Oversight $4.0M; and Uranium/Thorium Reimbursement $42.0M. The difference between the $350M payment into the fund and the $288.8M in workscope is $61.2M. This $61.2M will be left in the fund to help pay for the future cleanup of the Department's three gaseous diffusion plants.

Mr. Myers. Describe the program to provide funds to compensate companies for their past cleanup of uranium and thorium mill tailings.

Mr. Grumbly. Title X of the Energy Policy Act of 1992 required the Department to reimburse uranium and thorium processing site licensees for environmental cleanup costs incident to sales to the Federal Government, up to $270 million and $40 million respectively. There are 14 licensees that are eligible for reimbursement. In fiscal year 1994, the Department promulgated regulations under 10 CFR Part 765 that established the procedures and criteria for eligible licensees to submit claims for reimbursement. Each claim is audited by the Department to verify its accuracy, legitimacy, and completeness. Payment of approved claims is made using available appropriations from the Uranium Enrichment Decontamination and Decommissioning Fund. It is the Department's intent to request claims on at least an annual basis. Initial claims, totaling $127 million, were received on July 7, 1994. These claims have been audited and prorated payments were issued in December 1994. The Department is requesting licensees to submit their second claims by June 16, 1995. The Department plans to make the second payments this fiscal year. The reimbursement program is being implemented by existing Department staff with support from the Defense Contract Audit Agency.

Mr. Myers. What claims have been paid to date?

Mr. Grumbly. The Department received claims for $127 million in FY 1994. Financial and technical audits of all the claims were completed; $121 million of costs were approved, $4 million was questioned, and 2 million was disallowed. In December 1994, an initial payment of $40.4 million was made. A second payment of approximately $41.7 million is scheduled for late FY 1995. At the end of FY 1995, the Department estimated 68.1 million will have been paid to uranium licensees and 414 million will have been paid to the thorium licensee.

Mr. Myers. What is the anticipated distribution of the $42 million between uranium and thorium mill tailings?

Mr. Grumbly. In fiscal year 1996, the Department estimated $35 million will be distributed to uranium licensees and $7 million will be paid to the thorium licensee.

Mr. Myers. Why does the Department request funding for this program in Environmental Restoration and then transfer it to this Fund?

Mr. Grumbly. When Congress established the Uranium Enrichment D&D Fund, it required annual contributions to the Fund of $480 million annually adjusted for inflation. Deposits into the Fund were accumulate and collect interest to provide a source of funds for decontamination and decommissioning activities at the three gaseous diffusion plants owned by the Department. Because the Government contribution is based on the amount of enrichment services that were used for defense purposes, the Department requests the contribution under the Defense Environmental Restoration and Waste Management account. The Department then makes a payment from the Environmental Restoration account to the D&D Fund. The D&D Fund was established as a special fund that cannot receive direct appropriations. In addition to the transfer from Defense Environmental Restoration and Waste Management, the Government contribution, utility assessments, and interest earned are deposited as receipts to the Fund. Separate appropriations approve expenditures.

PRIVATIZATION

Mr. Myers. There have been many suggestions for privatizing portions of the current responsibilities of the Department of Energy. Do you view the Department's environmental testing work as a candidate for privatization?

Mr. Grumbly. The Department's environmental testing work is definitely a candidate for privatization, as are other analytical services requirements. For low-level and non-radioactive samples, most testing support should, and already does, come from private sector participants. Private sector analytical capability for highly radioactive samples is limited, and, in general, that capability is provided by the Department. The Office of Environmental Management (EM) is preparing guidance to the field and program offices responsible for EM activities which directs them to perform "make-or-buy" reviews when procuring analytical services for our programs. We intend for EM's environmental testing needs to be met through the least costly mechanism that adequately meets appropriate quality requirements.

ENVIRONMENTAL TESTING LABORATORIES

Mr. Skaggs. How do the costs in your environmental testing laboratories -- including management costs, personnel, overhead, and depreciation or amortization of invested capital (such as laboratory infrastructure and instrumentation) -- compare to what the private sector would charge for the same work?

Mr. Grumbly: The Department does maintain on-site laboratories at a number of sites principally to support ongoing operations activities, such as research, waste management, and nuclear weapons development and research activities. Although these labs perform some analytical services for the EM program, the vast majority of environmental testing is conducted by commercial labs. While detailed data comparing the costs of in-house to commercial laboratories is not universally available, activities are underway to collect this data and develop comparable cost factors.

Personnel and overhead costs of in-house facilities are usually higher than the private sector due to the use of more highly compensated and trained personnel and higher health, safety, and security costs. A major factor driving the high operational costs of high-level radiation laboratories is their designation as facilities subject to internal DOE nuclear facility procedures, orders, and requirements. These laboratories are also unable to achieve the same economies of operation enjoyed by private sector laboratories. External regulatory requirements have also imposed additional analytical services needs and costs on the Department, including the construction and outfitting of additional laboratory facilities.

Examples of current experience at DOE sites are summarized as follows:

> Two onsite laboratories provide services to the Idaho National Engineering Laboratory's Environmental Restoration Program and other on-site activities such as the Advanced Test Reactor. Cost analyses indicate that one on-site laboratory is essentially comparable in cost to private sector laboratories because of its high utilization rate. The second lab has costs somewhat higher than private sector laboratories in part because it maintains capabilities to analyze radioactive samples that are not available in the private sector.

All analytical services associated with the Department's Formerly Utilized Sites Remedial Action Program (FUSRAP) are contracted out to private sector laboratories.

Oak Ridge uses both on- and off-site laboratories and makes a decision on which type of facility to use based upon a cost and need determination. The site has a database of in-house lab costs to support these decisions. For the Environmental Restoration Program, the vast majority of testing (approximately 99%) is performed off-site.

Mr. Skaggs. The environmental management portion of the budget is approximately $6 billion. What percentage of your budget would you estimate goes to routine environmental sampling and testing?

Mr. Grumbly. A definitive number cannot be provided at this time. As a general rule, data collection (i.e. sampling, analysis, validation of results, etc.) can be 15% of environmental program costs, although there is a significant variability in costs for specific activities. For example, high-level waste sampling and analysis requires unique expertise and has high additional costs associated with these capabilities. Analytical services associated with waste management or restoration activities often incur additional costs associated with meeting project and compliance schedules -- especially during the initial project phases. Analytical services costs decrease as requirements for broad (and expensive) characterization are replaced by simpler (and less costly) monitoring program needs.

Initiatives are underway to use the Data Quality Objective process developed by the Environmental Protection Agency (EPA) to better define our environmental and waste characterization needs and decrease associated costs throughout the program. Routine utilization of this process has been shown by the Department and EPA to achieve significant savings in time and in the total costs of restoration and waste management.

Mr. Skaggs. Do you believe that federal environmental testing laboratories should be held to the same quality control standards that apply to private sector laboratories?

Mr. Grumbly. The Department feels quality control standards should be set that are appropriate to meet program requirements, regardless of the source of the analytical testing. The testing laboratory, whether federal or private sector, must meet the specific quality standards that are applicable to the needs driving the sampling and analysis. In other words, different sampling and analytical tasks have different quality control/quality assurance (QA-QC) requirements attached to them. The Data Quality Objective process mentioned in response to Question 88 should be the basis for defining the quality standards that are required whatever the source of testing. Make-or-buy decisions will be made to determine which source meets the combined service/QA-QC requirements at the lowest cost.

EMPLOYMENT REDUCTIONS

Mr. Bevill. What kinds of reductions in overall employment are we talking about in your proposed cuts, and what would the impact of accelerating those cuts be? Please address by site.

Mr. Grumbly. Attached is a listing of the Environmental Management contract employee target reductions by site. This schedule also shows the proposed reductions, a) as a percentage of the EM budget at each site and, b) as a percentage of total FY 94 total site employment.

Accelerating the reductions would result in two things: greater FY 95 special restructuring costs, and greater overall salary, benefit and reduction-related savings. Recognizing this, at the time of the announcement of the reduction targets we instructed the sites to accelerate the reductions as much as possible, consistent with the requirements of Section 3161. The sites have done so, with most attempting to complete the reductions by the end of calendar year 1995. Reductions across the complex will be implemented incrementally to allow time to conduct skills requirements analyses, before determining which categories of employees should be targeted for reductions, or because of program needs for temporary retention of critical skills.

Sites (% of FY96 EM Budget)	FY95	FY96 (Projected)	Total Reduction	As % of FY94 Site Employment Total
Richland, WA (19.6%)	2,500	2,000	4,500	26%
Savannah River, SC (18.4%)	0	4,200	4,200	22%
Rocky Flats, CO (8.7%)	700	1,700	2,400	35%
Idaho (6.6%)	1,250	1,000	2,250	30%
Fernald, OH (3.5%)	400	200	600	25%
Mound, OH (1.5%)	200	100	300	22%
Oak Ridge, TN (11.3%)	1,400	635	2,035	12%
Pinellas, FL (.7%)	0	350	350	34%
Los Alamos National Lab, NM (1.9%)	0	194	194	2%
Lawrence Livermore National Lab, CA (1.1%)	0	100	100	1%
Argonne National Lab-East, IL (.3%)	0	50	50	1%
Ames, IA (.01%)	0	40	40	7%
Sandia National Laboratory, NM (.6%)	0	32	32	<1%
Pantex, TX (.3%)	0	10	10	<1%
Ashtabula, OH	0	60	60	–%
Grand Junction, CO	0	180	180	–%
UMTRA Sites, various	0	207	207	–%
TOTAL EM CONTRACTOR REDUCTIONS	6,450	11,058	17,508	

Bold represents EM Lead Sites

FUNDING BY SITE

Mr. Bevill. You have requested the flexibility to budget for your programs on a site by site basis. How would this proposal save us money? Do you think that Congress is capable of appropriating funds by site with some rationality and without political interference?

Mr. Grumbly. Under the Environmental Management program's current appropriation structure, the focus is on the type of activity being conducted rather than on the site where work is being performed. This produces a situation where regulators and stakeholders tend to look outside the particular site for additional funds to cover unforseen circumstances rather than attempting to achieve an optimum balance among priorities at the site. It also produces a situation, after appropriations are created, where the site manager has little flexibility to reallocate funds provided to the site to take advantage of cost savings and efficiency opportunities or to address emerging urgent risks since any proposal to shift funds from one budget category to another requires a formal reprogramming proposal.

At the other extreme, site-based budgeting would help improve integration of operations at our sites, and allow more flexibility in responding to changing environmental conditions and priorities. It would also allow a more tailored approach to risk reduction, letting the site managers and stakeholders determine what the greatest risks are at the individual site and how to prioritize activities. Further, by providing flexibility to spend funds immediately on emerging, unanticipated situations, we would avoid the additional costs incurred when environmental situations deteriorate awaiting paperwork processing. Often these situations result in higher costs due to increased areas of contamination, larger waste volumes, or other problems.

The Department's environmental problems are not confined to a few sites or Congressional districts. They occur at more than 130 sites in 30 States. With this broad base of interest and concern, it is essential that DOE work with affected communities, regulators and members of Congress to agree on a rational, consistent basis for allocation of Environmental Management funding. The proposal to appropriate funds by specific sites would shift the responsibility to set priorities locally.

The Department is confident that Congress can appropriate funds rationally. The Department's budget request provides adequate analytical support for making these site specific appropriations. We are open to other options to meet the need for additional flexibility.

REDUCTION IN REGULATIONS

Mr. Bevill. Much has been said about the over regulation of DOE sites and the added costs this brings about. The Secretary indicated yesterday that an overall review is underway to rationalize this process. What results do you expect and when will real changes and budget savings occur?

Mr. Grumbly. In an effort to simplify our internal requirements, and in recognition of Executive Order 12861, *Elimination of One-Half of Executive Branch Internal Regulations*, the Secretary directed that a review of all DOE orders take place. We are still working on this effort, but to date, the Secretary has cancelled 76 of 312 orders. In the environment, safety and health area the Department will be reducing 47 orders to approximately 18 orders and 11 rules (issued pursuant to the requirements of the Price-Anderson Act Amendments of 1988). Our environmental orders will be reduced to only 2 and will allow for the maximum flexibility at the Field Office level. This review is expected to be completed prior to the end of this fiscal year.

The directives reduction initiative is a balance of ensuring the safety and health of workers, which is the paramount consideration, and reducing redundant, burdensome, or inappropriate requirements. In addition to orders and standards, the Department has committed to operate to OSHA standards. OSHA requirements, like Departmental requirements, will be reviewed (at the activity, facility, or site level as appropriate) to determine those which are necessary and sufficient for ensuring the safety and health of workers while performing work.

Notwithstanding the Order revision initiative that is ongoing, the Department is pursuing a process to tailor standards and requirements that apply to a given facility/activity to the complexity of the operation and the hazard it poses. The Office of Environmental Management is fully committed to this set of necessary and sufficient standards, including commercial standards where deemed appropriate, to enhance safety performance and reduce operating costs. This necessary and sufficient based approach ensures value-added for each safety and health measure adopted, and provides cost savings by reducing the burden of inappropriately applying standards with no commensurate improvement in worker safety and health.

The necessary and sufficient approach is being applied at several of our sites and facilities across the complex. The preliminary indications are very positive and have demonstrated that the process will allow us to conduct our activities in an environmentally sound, safe and cost effective manner. The Department will be tracking the cost benefits as the program is fully implemented.

In addition to reviewing internal processes, the Secretary announced, on February 16, 1995, the formation of a federal Advisory Committee on External Regulation of Department of Energy (DOE) Nuclear Safety. The panel will recommend how existing and new DOE facilities and operations should best be overseen to enhance nuclear safety, eliminate unnecessary oversight, and reduce costs. The committee's charter responds to a growing sentiment within the Department, at DOE facilities, and by external observers that DOE self-regulation is cumbersome and inefficient, and that external regulation could improve safety and cut costs. A transition to external regulation was also embraced during a meeting held in February with the Directors of DOE's major laboratories, and senior DOE officials.

MAJOR SUCCESSES

Mr. Fazio. Please take this opportunity to highlight some of your greatest successes.

Mr. Grumbly. Our successes have come in many categories. We have made significant progress since the establishment of the program in remediating some of the nation's most contaminated areas and buildings. We have also made substantial gains in the last year in reducing urgent risks as well as changing the way we do business to become more efficient and less expensive.

Since establishing the Office of Environmental Management in 1989, we have:

-- Remediated 5,000 properties contaminated with uranium tailings;
-- Completed cleanup of 16 former nuclear weapons and industrial sites, 35% of the total;
-- Completed cleanup of 14 out of 24 uranium mill sites;
-- Cleaned up 119 waste sites;
-- Decommisioned 100 facilities;
-- Removed 30 million cubic meters of contaminated soil and uranium tailings;
-- Treated a total of 4.2 billion gallons of contaminated surface and groundwater; and
-- Established 9 site advisory boards to help build stronger stakeholder relationships and restore trust.

In addition to these cumulative achievements, we have made progress in each of our six strategic goals.

REDUCING URGENT RISKS: We have addressed three of our greatest safety concerns in the past year.

First, the risk of explosion in a high-level radioactive waste tank at our Hanford, Washington site has been virtually eliminated now that a unique mixing pump has been installed, tested, and is now in routine operation. This pump allows the hydrogen gas that builds up inside the tank to be vented evenly, avoiding sporadic build-ups and uncontrolled releases that have occurred in the past.

Second, we have begun the stabilization of some of the most hazardous materials in our system: plutonium. Some of the plutonium we have is presently stored in unstable forms and/or conditions, and this presents a fire hazard since plutonium can spontaneously ignite in the air under certain conditions. One building at our Rocky Flats site in Colorado contains nearly 100 kilograms of this unstable plutonium. The stabilization activities will eliminate the risk of fire and result in safer storage conditions.

Third, we manage nearly 3,000 metric tons of highly radioactive spent nucler fuel. Some of this material has been in storage for over 30 years, and is corroding. This leads to the risk of a radioactive release and/or exposures to workers. Also, many of the storage facilities were not designed to contain the fuel for as long as they have. We have begun an agressive campaign to upgrade storage facilities, build new ones, and transfer the spent fuel into safer conditions. Last year we successfully transferred 199 spent fuel elements to safer storage.

WORKER HEALTH AND SAFETY: We are continuing to put more emphasis on protecting the health and safety of the people who are in the "front lines" of our mission. Last year we reduced the number of work-days lost due to accident by 12%. We are also continuing with training programs to better equip workers with the skills and knowledge necessary to safely conduct their tasks. Thousands of workers will be trained in hazardous waste operations and safety procedures as part of our ongoing program.

GAINING MANAGERIAL AND FINANCIAL CONTROL: We are moving ahead with bold changes in the way we do business.

- We are recompeting $30 billion worth of contracts to bring incentives more in line with the new missions we have, and thus save the taxpayers money. The consolidation of the Idaho National Engineering Laboratory contracts alone will save $500 million.
- We are strengthening our ability to manage contractors more effeciently by hiring federal employees with experience in cost estimating and project managing.
- And we are looking for opportunities to allocate funds more flexibly and based on risk. Our proposal for a FY 1996 site-based budget at Rocky Flats will demonstrate how this can lead to more effective and efficient budgeting.

DEMONSTRATING TANGIBLE RESULTS: I have already listed some of the programs cumulative achievements, and would like to refer you to my written statement for a detailed list of recent accomplishments and commitments for the future. I would like to point out, however, that the Environmental Management program has finally turned the corner on results and is, for the first time, devoting more resources to actual cleanup activities than to remedial investigations, feasibility studies, and characterization work. This trend will continue, as more and more of our efforts and funds will be devoted to turning earth, and less and less to pushing paper.

DEVELOP NEW AND IMPROVED TECHNOLOGIES: We have demonstrated and made available for transfer to the private sector and other Federal agencies 24 new or improved environmental technologies in the last year. Our plans for the next year are ambitious: we plan to demonstrate 50 new or improved technologies that will increase effectiveness and/or reduce costs.

STRENGTHEN STAKEHOLDER PARTNERSHIPS: We are continuing to increase opportunities for input and participation by affected stakeholders.

- We have formed 9 Site Specific Advisory Boards to foster meaningful input into decision making at our sites.
- I established an Office of Public Accountability in 1993 shortly after taking office.
- The Environmental Management Advisory Board (EMAB) involves representatives

from labor, the U.S. Environmental Protection Agency, tribes, states, and citizen groups in a variety of issues facing the Environmental Management program. The EMAB was recently reconstituted, and now has 28 members.

We are also committed, in accordance with Executive Order 12898 on environmental justice, to working with those individuals and groups around our sites who may consider themselves to be disenfranchised. For example, we are working to ensure that the Native American communities around our sites are responsibly included in all of our regulatory negotiations.

Mr. Fazio. Are there any particular projects or programs that are particularly worthy of praise for turning things around or turning a corner?

Mr. Grumbly. The Department of Energy's Environmental Management program is making significant strides in reducing the environmental and public health risks and hazards from more than fifty years of nuclear weapons production, testing, and research. These results not only demonstrate significant progress, but also reflect a new way of doing business by addressing urgent risks first while simultaneously managing the long-term contamination and health risks present at our sites. Listed below by site are several projects and programs worthy of mention for turning things around.

HANFORD, WASHINGTON

Notable projects at Hanfond include the cleanup of the North Slope and ALE Reserve areas, which constitute 46% (250 square miles) of the surface area of the site, to be made available for other uses; completion of the Orphan Underground Storage Tank Removal Program one year ahead of schedule; and completion of 1100 Area (one of four Hanford National Priority List sites) remediation in FY 1995.

The mixing pump installed in our most hazardous tank, the hydrogen burping 101-SY, has controlled the release of potentially explosive hydrogen now for one and a half years. In fact, the test pump is performing so well that we will use another mixing pump as the backup, at a savings of over $10 million.

In the High-Level Waste tank farms, we re-started the evaporator, processing in excess of 5 million gallons of waste, and recovered over 3 million gallons of tank space. This operation is helping alleviate the need for construction of additional underground storage tanks.

Last year, we started the 300 Area Treated Effluent Disposal Facility operation. This operation was started ahead of schedule and $1.8 million under budget. The facility plays a major role in Hanford's commitment to stop disposing of untreated liquids directly to the soil, and to protect Hanford groundwater and the Columbia River.

We have started deactivation of the Fast Flux Test Facility (FFTF). This deactivation will reduce overall annual plant operating costs from $60 million to $2 million over the next 7 years. Currently, reactor defueling is 2 months ahead of schedule. Additionally, we have approved the accelerated construction of a sodium storage facility to allow for the draining of liquid sodium from the reactor systems. This accelerated construction effort additionally will reduce the overall facility deactivation costs by $36 million.

Third, Vice President Gore commended a team of employees for their successful privatization of a surplus 4,000 ton extrusion press owned by DOE. The extrusion press was transferred to the City of Richland, Washington, and was used to attract Kaiser Aluminum and Chemical Corporation to the area. Kaiser has launched a new business to produce extruded aluminum products.

SAVANNAH RIVER SITE, SOUTH CAROLINA

After a number of technical problems and schedule delays which had plagued the startup of the Defense Waste Processing Facility, a comprehensive plan in now in place to achieve startup in December 1995.

We are also deactivating the Savannah River Site fuel fabrication facilities. In FY 1995 and FY 1996, the highly enriched uranium is being cast into ingots and shipped to Oak Ridge for consolidated storage with other uranium. Once this material is removed from the Savannah River site facilities, the security forces can be disbanded and considerable money saved. In FY 1995, the operating budget for these facilities was $26 million, while in FY-1996 the operating budget should be $22 million. Following FY 1996, annual operating costs are expected to decrease to approximately $5 million.

IDAHO NATIONAL ENGINEERING LABORATORY, IDAHO

A program that has made great progress in a short period of time is the spent fuel storage program at the Idaho Chemical Processing Plant located at the Idaho National Engineering Laboratory (INEL). The old degraded fuel storage facility (CPP-603) is used to store spent fuel previously shipped to Idaho. This facility experienced corrosion of spent fuel storage equipment and containers due to the age of the facility and water chemistry problems. In 1993, DOE began a concerted effort was begun to place this spent fuel into compliant storage. New stainless steel equipment was used to provide a backup to the corroded storage equipment. Spent fuel in weakened storage containers was repackaged to ensure integrity of the fuel containers. A plan was developed to remove all fuel from the CPP-603 underwater storage basins and decommission the facility. The fuel movements out of the facility began in November, 1993 and are continuing ahead of schedule. Over 220 fuel elements have been transferred to the modern fuel storage area (CPP-666). The CPP-603 facility storage basins will be completely emptied of spent nuclear fuel by December, 2000. DOE and the operating contractor received a commendation from the Defense Nuclear Facility Safety Board in a July 6, 1994 letter for this activity.

At INEL for the past 3 years, we have been deactivating the Idaho Chemical Processing Plant (ICPP) and stabilizing fissile materials. Over 300 kilograms of enriched uranium has been stabilized and removed from the former operating lines. The removal of the enriched uranium from the former processing lines has resulted in lower surveillance and maintenance costs, as several hundred instruments have been taken out of service and no longer require either monitoring or calibration. Additional savings are being accrued as a result of no continued need to perform preventive or corrective maintenance on equipment taken out of service.

The INEL Federal Facilities Agreement and Compliance Order is a major success story for DOE. Since the agreement was signed in December 1991, nine Records of Decision have been signed, 153 of the 335 potential release sites have been resolved as "No Further Action" required, all 44 pre and post Record of Decision enforceable milestones have been met, three major CERCLA Interim Actions have been completed, two are underway, and real cleanup is being accomplished at every Waste Area Group defined in the Federal Facility Agreement/Consent Order (FFA/CO). We accomplished this while saving upwards of $50 million dollars through use of the streamlined assessment process and the "bias for action" prescribed in the agreement as opposed to the cost of the standard CERCLA Remedial Investigation/Feasibility Study process.

The Pit 9 procurement at INEL represents a major turning point in the way DOE accomplishes cleanup work. The contract is a private sector "fixed-price", "pay for performance" vehicle in which the cost risk is primarily on the sub-contractor. The project is using innovative technologies many of which were developed under earlier Environmental Management funded Technology Development studies. This project is addressing the cleanup of buried, transuranic (primarily plutonium) waste from the Rocky Flats Plant, and is expected to pave the way for potential treatment, as appropriate, of the vast inventory of buried waste at INEL and throughout the DOE complex.

ROCKY FLATS, COLORADO

An accelerated action under a proposed action memorandum to remove hot spots located in Operable Unit 1 will be completed in FY 1995. This action will reduce the overall risk level of Operable Unit 1 to levels which will allow a No Further Action Record of Decision and will reduce the remediation costs by tens of millions of dollars. Rocky Flats is aggressively pursuing several accelerated actions for the cleanup or removal of contamination from release sites. These early cleanup actions are expected to reduce the risks in these release sites to no action levels which will eliminate the need for completing the time-consuming, costly RCRA/CERCLA process to accomplish the same end and may result in a No Further Action alternative. Examples include hot spots, tanks, PCBs, and free liquids removal. Rocky Flats has expedited the closure of Operable Unit 15 and is proposing an accelerated schedule for completion of the Final Record of Decision which will shorten the original schedule some 3-1/2 years with a significant cost savings.

The following noteworthy actions have also taken place at the Rocky Flats Site during FY 1994 and FY 1995: initiated of shipments of low-level waste generated by Rocky Flats to the Nevada Test Site, and continued shipments to Hanford; continued a cost productivity improvement program that has achieved $70 million total savings; solidified 385 bottles of dilute plutonium solutions in Building 771; completed an environmental assessment for Phase-II liquid stabilization activities in Buildings 771 and 371; and the completed an environmental assessment and initiated the thermal stabilization of plutonium materials for improved safe storage of material.

FERNALD, OHIO

The Fernald site is an excellent example of a project that has turned the corner. A few years ago, this project was the focus of significant concern raised by the regulators and local public. It received significant negative national attention due to the lack of ability to proceed with cleanup actions at the site. Since that time, we have completed 18 removal actions and plan to complete additional removal actions in FY 1995. The completed removal actions include the K-65 Silos removal action, which addressed the single largest point source of radioactive airborne contamination from the site. Assessment activities are coming to a close with the finalization of Record of Decision for the site; two Records of Decision were issued in FY 1994, three will be issued in FY 1995, and the final Record of Decision will be issued in FY 1996. Completing the assessment phase will allow the Department to focus our efforts on the cleanup of the site. Remedial action was started with the demolition of two major plant structures in FY 1994, the planned demolition of two major plant structures in FY 1995, and the initiation of construction of the Operable Unit 4 pilot vitrification plant in FY 1994. In FY 1995, an additional 575,000 cubic feet of low-level waste will be disposed from the Fernald site, bringing the total amount dispositioned to 4,300,000 cubic feet. This included the disposal of 149 out of 1,100 tons of thorium stored on site. In FY 1994, 31,400 cubic feet of mixed waste backlog were removed from the site, and 15,000 cubic feet of mixed waste are planned to be disposed of in FY 1995. A work force restructuring action was performed in FY 1994 and one is currently underway to better focus the work force on performance of the cleanup action.

LAWRENCE LIVERMORE NATIONAL LABORATORY

At the Lawrence Livermore National Laboratory Main Site, DOE was able to accelerate the cleanup time of fuel hydrocarbon contamination in the groundwater. Approximately 10,000 gallons of gasoline was recovered at Treatment Facility F using Dynamic Underground Stripping Technology in a shorter time than using conventional pump and treat systems.

WELDON SPRING

Weldon Spring Site is one project that exemplifies a turn around in stakeholder support. In December 1987, the Department proposed to stakeholders to clean up the site and bury the waste in an on site disposal facility. It was unanimously rejected by all stakeholders. In September 1993, the site proposed a CERCLA Record of Decision to clean up the site and dispose of the waste in an on site disposal facility, which was unanimously accepted by the stakeholders. This turn around can be attributed to improved stakeholder involved and communication, and paying attention to stakeholder concerns. The implementation of interim removal actions to expedite clean up as well as the use of the SAFER approach to expedite assessments provide the stakeholders the evidence that DOE fully intended to conduct responsible environmental clean up at the site that was acceptable to them.

TECHNOLOGY DEVELOPMENT

Environmental Management's Office of Technology Development offers the following success stories as highlights of its programmatic accomplishments to date. They are as follows:

Expedited Site Characterization Gaining Rapid Acceptance -- Demonstration of the integrated characterization approach using rapid, cost-effective minimally intrusive technologies was done successfully by an interdisciplinary team. The entire characterization process was expedited through on-site data analysis, data integration, and improved real-time decision-making. The process initially was demonstrated at several U.S. Department of Agriculture sites in Nebraska and at DOE's Pantex Plant in Texas with regulatory approval of the work plan and characterization results. Time savings of 50 to 90 percent and cost savings of 50 to 75 percent have been realized over traditional site characterization methodologies.

Horizontal Wells for Vapor Extraction Accepted as Industrial Standard -- Industry has accepted DOE-developed horizontal wells as its new standard to remove volatile organic compounds from the vadose zone. The technology was demonstrated five times more effective than traditional pump and treat cleanup methods. The technology is licensed to 14 companies of all sizes; was demonstrated on two Air Force bases and at DOE's Paducha site, is listed in 30 Record of Decisions, and is available for application. Estimates indicate that treatment costs can be reduced by 40 percent.

Minimum Additive Waste Stabilization (MAWS) Reduces Volume for Disposal - This concept views waste streams as resources for vitrification treatment of low level and mixed wastes. MAWS treatment is done on-site, reduces the need for non-waste additives and thermal treatment processes, and reduces overall volume of the final product. MAWS produces a quality, durable final glass waste form, exhibits projected cost savings of > 50 percent better than conventional cementation treatment, while reducing waste volume by 25 percent or more. Primary cost differences are driven by disposal volume and containerization needed for conventional treatment. MAWS was demonstrated at DOE's Fernald, Ohio site; GTS-Duratek, under contract at DOE's Savannah River Site, is vitrifying sludges using MAWS. Duratek and Chem-Nuclear Systems have formed a joint venture to design, build, and operate a commercial, low-level radioactive waste vitrification plant using MAWS in South Carolina.

Interagency - Industry Collaboration Demonstrates Innovative Bioremediation Technologies -- Full-scale demonstration of innovative technological systems using in-situ bioremediation is a partnership between six U.S. companies, Environmental Protection Agency, Air Force, Department of Energy, and the State of Delaware. The investors in the demonstration are the problem holders. Demonstrations of DOE's innovative technology is to be done on the Dover Air Force Base. The Air Force is funding infrastructure costs; EPA and the State of Delaware are obtaining the permits. Once demonstrated successfully, the technologies can be used for cleanup at both private sector and Government sites. The government and industry are cost sharing the demonstration 50-50; estimated cost savings are between 50 to 75 percent of cleanup costs.

These and other implemented innovative technologies have resulted in a savings of over $115 million to date in DOE. Savings in other agencies and the private sector are being documented. Future application of these and other innovative technologies can result in savings in the billions of dollars.

FEDERAL FACILITIES COMPLIANCE AGREEMENT

The Department of Energy (DOE) is following a unique program under the Federal Facility Compliance Act (FFCAct) to plan for the treatment of mixed radioactive and hazardous waste to meet Resource Conservation and Recovery Act (RCRA) standards.

Through the development of Site Treatment Plans, this program is devising a plan to alleviate the risks associated with the hazardous constituents of 600,000 cubic meters of waste under DOE purview at 49 sites in 22 states. These waste streams are not in compliance with the land disposal restrictions under RCRA.

The FFCAct process developed over the past year has resulted in a new way of doing business for the Department of Energy and its regulators. This process includes open communication and cooperation with the State regulators, EPA, and Tribal Governments on a national scale, facilitated through the National Governors' Association (NGA). The main element of this open communication is unconstrained sharing of information with the regulators and the public, reflecting DOE's emphasis on openness in government. This provides everyone involved with the same level of understanding of the challenges facing DOE and an opportunity to provide knowledgeable input to their decisions. Issues have been raised early through continued discussion with regulators and the public and have been addressed through changes to the process. This approach is a break from the historic practice of "decide, announce, defend" and has proven to be more successful.

The program is less than one year from completing its initial goal: to develop plans for treating all of this waste. Program implementation will continue for many years following the structure for mixed waste management activities presented in the plans. At the end of March, DOE will present its proposal for treating all of these waste to its regulators. Negotiations will then take place at the DOE sites, resulting in the issuance of enforceable Orders by October 1995, which will mark the achievement of this program's goal.

This resulting process will serve as a platform to address other issues, building on the relationships and forums created by the FFCAct implementation.

EM'S INHERITED PROBLEMS

Mr. Fazio. Will you please describe the general state of the programs you inherited?

Mr. Grumbly. There are two elements that are important to understand about the state of the environmental management program when I began directing it -- physical problems and institutional problems. We are fixing both. We also inherited a large cadre of talented people, from world class scientists to skilled technicians -- representing valuable national resources.

First, there are the physical conditions of the buildings, facilities, and surrounding environment. These were severely deteriorated, resulting in serious safety risks as well as an enormous backlog of accumulated contamination of the environment. I have already outlined in my written statement the tasks we are responsible for, and my written statement explains these more fully. However, I would like to say, briefly, that the physical conditions of the sites when we inherited them amounted to a modern-day Manhattan Project-scale environmental project. This was the result of over fifty years of nuclear weapons production, testing and research with little or no priority given to environmental impacts.

Second, there are the organizational and institutional legacies. The business practices of the past, when the primary mission of the Department was the production and testing of nuclear weapons, are not suited to the new mission of environmental restoration, waste management, and public and worker safety. For example:

-- The business system in place with the Department's contractors was rigid and oligopolistic. There was too little competition for contracts, and the norm was to have one large M&O contractor manage an entire site. Also, the incentives were not based on saving money but on spending it.

-- When the Environmental Management program was established, new environmental contractors were brought in. However, rather than supplanting the old contractors, they were layered on top. This created another layer of employees, bureaucracy, and costs.

-- We inherited 70 enforceable compliance agreements that were signed in an environment much different than today without adequate consideration of technical feasibility or the pace of funding. As a result, many of the compliance milestones are technically infeasible or simply ask too much too soon.

-- Our management was lopsided. We had too many middle managers and a bloated contractor workforce with too few cost estimators and experienced cost estimators to effectively evaluate contractors' cost proposals.

-- The risks and environmental problems around the Department's weapons complex were not fully understood. For a time, there was an effort to quantify the risks from the top down, relying on expensive, detailed risk models that provide false precision and had little usefulness in a management sense.

-- Efforts to develop the environmental assessment and remediation technologies were not adequately focused on achievable priorities risks by identifying them, then creating methods to remediate them, was diffuse.

These problems were the result of decades of a "production first" organizational culture. We are now changing that culture and the problems it presents for achieving our environmental, safety, and health goals. We are identifying and prioritizing the urgent risks, recompeting contracts, renegotiating compliance agreements, reducing the contractor workforce, establishing meaningful relationships with stakeholders and the public to guide decisions, and focusing our technology development efforts to provide cost-effective remediation techniques.

Mr. Fazio. Although it would be impossible for you to enter with a completely clean slate, were there actions taken previous to your taking control that restricted your ability to do business?

Mr. Grumbly. The most significant actions were not those of a single administration or legislative initiative, but rather the historic operating environment of the nuclear weapons production system. In the fifty years that this nation produced nuclear weapons, we did not place any priority on minimizing the waste or preventing the pollution associated with these activities. And these waste streams and contaminants are significant.

As I mentioned earlier, we also are dealing with a system that historically has been insulated from public awareness and oversight, issued contracts to a narrow range of companies, and then operated those contracts under unique and unusually favorable conditions to the contractors.

Furthermore, the Department of Energy and its predecessors, until recently, operated outside of the environmental and health and safety laws of the land. Laws which private industry had to comply with. This was the result, again, of the mission and culture of the Department being so overwhelmingly tied to national security. However, the legacy of these exemptions is severe and widespread contamination, unsafe facilities, and huge volumes of hazardous waste and materials that we must safely store, treat, and/or dispose of.

We are attempting to address these legacies by allowing -- indeed encouraging -- more public access to information and the decision making process, opening our contract competition to a wider range of private companies to ensure that we find the best suited skills, and altering the way contracts are written to put a premium on incentives for saving money and increasing safety. We have also instituted waste minimization and pollution prevention programs into the work that we do, so that in managing the environment, safety and health risks of the complex, we do not create more of them.

Mr. Fazio. Recognizing that you probably neither seen nor heard Dr. Teller's testimony, will you please comment on the view that DOE's environmental problems are not as bad as we have been led to believe?

Mr. Grumbly. The views of Dr. Teller, based upon his experiences, are not shared by many of the experts that have performed environmental assessments, nor shared by those who live adjacent to contaminated sites. Since the extent of environmental problems range over many magnitudes, and the necessary level of remediation depends on the future land use, there is not a simple answer to this question. Some projects are included within Dr. Teller's estimation of low risk; but most sites will still require remediation now, or surveillance far into the future. Dr. Teller is an eminent scientist in the areas of theoretical physics and weapons development and a keen observer of all science. However, he is not necessarily qualified on issues related to public health, environmental science and engineering, toxicology, nuclear safety, industrial hygiene, risk analysis or public participation.

PROPOSED FY 1995 RESCISSIONS

Mr. Fazio. What impacts do you see from the proposed rescissions bill?

Mr. Grumbly. The proposed rescissions have been targeted at two different accounts under the Environmental Management program, defense non-defense.

In general, the amounts being taken out of the defense account are relatively small given the size of the account. These reductions can be managed if we terminate low-priority ongoing projects, do not begin low priority projects that were originally scheduled, defer maintenance and upgrades, and cut certain technology development programs. However, the proposed rescissions in our non-defense account are much larger relative to the size of that overall account. Given this difference, and the timing of the rescissions -- halfway through the fiscal year, which, in effect, doubles the impact of the reduction -- I am concerned that these rescissions will have potentially detrimental impacts to many of our ongoing projects. In fact, we have identified nearly 90 projects in 25 states that would suffer, at an average of roughly 17 percent of their funding, from these non-defense cuts.

Attached is a letter to Chairman Robert Livingston regarding the proposed $45 million rescission from the Environmental Management program and the consequences of such a rescission.

Department of Energy
Washington, DC 20585

March 2, 1995

The Honorable Robert Livingston
Chairman
House Committee on Appropriations
U.S. House of Representatives
Washington, D.C 20515

Dear Mr. Chairman:

I am writing to register the Department's serious concern about the proposed $45 million rescission from the FY 1995 non-defense budget for the Environmental Management program. As I indicated in a letter to your committee on February 22, Congress cannot continue to cut away at this program without real consequences. The Department has already taken productivity improvement cuts of more than $2 billion between 1993 and 1996, and are in the midst of laying off 18,000 contractor employees. There are not unlimited efficiencies that can be gained by cutting this budget. The Department is dealing with some of the highest risks in the world today, such as potentially explosive underground radioactive waste tanks and unstable weapons-usable plutonium. We have a duty and a moral obligation to protect the safety of the workers at these dangerous facilities and the communities that surround them.

In addition, our budget reflects more than 70 legal agreements with States and the U.S. Environmental Protection Agency to bring Departmental facilities into compliance with applicable environmental laws. To rescind funding for meeting environmental and safety requirements amounts to an unfunded mandate within the federal government.

This letter is intended to provide formal notification to the Appropriations Committee that the $45 million cut will have a real and direct impact on our ability to deal with the serious environmental and safety issues at nearly 90 sites in 26 states. This is not a "Washington Monument", as some individuals have suggested. There is no mysterious overhead account from which these cuts can be taken painlessly. These cuts will have consequences.

The impact of the proposed $45 million rescission is particularly severe because it is taken from the non-defense portion of our budget and it occurs at the midpoint of the fiscal year. As you know, non-defense spending accounts for only about 10 percent of the Environmental Management program budget. Hence, even though the rescission is less than half of the $100 million rescission taken from our defense account, this new rescission is from a much smaller program and thus has a proportionately greater impact.

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Also, because the proposed $45 million rescission occurs midway through the fiscal year, it will have an effect roughly double that of a similar cut taken from the full year. Moreover, the proposed cut would be taken "against those activities which are not direct cleanup efforts at Department of Energy sites." Hence, of the non-defense funding for the Environmental Management program, approximately $388.5 million is directed at "cleanup" or environmental restoration activities. Approximately half of that funding supports "direct" remedial activities (rather than investigations and planning leading to these activities) and would be protected from cuts under the proposed rescission language. The cuts would therefore be taken from the remaining $529 million, only half of which ($264 million) remains in the current fiscal year. Consequently the proposed rescission would have the effect of annual 17 percent cut in available relevant funding at numerous sites (see enclosed list).

We would like to reiterate the request in our February 22 letter to have the opportunity to discuss both the Committee's action and the long-term activities of the Environmental Management program with you. Please call me or Assistant Secretary for Congressional and Intergovernmental Affairs William J. Taylor III at (202) 586-5450 to schedule a briefing. We look forward to working cooperatively on these challenging issues.

Sincerely,

Thomas P. Grumbly

Thomas P. Grumbly
Assistant Secretary for
Environmental Management

Enclosure

cc: The Honorable David Obey
Ranking Minority Member

U.S. Department of Energy Facilities Potentially Affected By Reductions in "Non-Defense" Environmental and Safety Budgets

STATE SITE

- ARIZONA
  - Monument Valley
  - Tuba City
- CALIFORNIA
  - General Atomics
  - General Electric - Vallecitos
  - Lawrence Berkeley Lab
  - Oakland DOE Operations
  - Santa Susanna Field Laboratory
  - Stanford Linear Accelerator
  - University of California at Davis
- COLORADO
  - Durango
  - Grand Junction
  - Grand Junction Project Office
  - Gunnison
  - Maybell
  - Naturita
  - Old North Continent, Slick Rock
  - Rifle Site #1
  - Rifle Site #2
  - Union Carbide, Slick Rock
- CONNECTICUT
  - Combustion Engineering Site, Windsor
- IOWA
  - Ames Lab
- IDAHO
  - Argonne National Lab-Idaho
  - Idaho National Engineering Lab.
  - Lowman
- ILLINOIS
  - Argonne National Lab-Illinois
  - Chicago DOE Operations
  - Fermi Nat'l Lab
  - Madison
- KENTUCKY
  - Paducah
- MASSACHUSETTS
  - Chapman Valve, Indian Orchard
  - Shpack Landfill, Norton
  - Ventron, Beverly
- MARYLAND
  - W.R. Grace & Co., Curtis Bay
- MARYLAND/DISTRICT OF COLUMBIA
  - DOE Headquarters
- MICHIGAN
  - General Motors, Adrian
- MISSOURI
  - Latty Avenue Properties, Hazelwood
  - St. Louis County Storage Site, St. Louis County
  - St. Louis Downtown Sites, St. Louis
  - St. Louis Vicinity Properties, St. Louis County
  - Weldon Spring
- NORTH DAKOTA
  - Belfield
  - Bowman
- NEW JERSEY
  - DuPont & Company, Deepwater
  - Maywood Chemical Works, Maywood
  - Middlesex Sampling Plant, Middlesex
  - New Brunswick Laboratory, New Brunswick

STATE SITE

- NEW JERSEY (Cont.)
  - DuPont & Company, Deepwater
  - Maywood Chemical Works, Maywood
  - Middlesex Sampling Plant, Middlesex
  - New Brunswick Lab, New Brunswick
  - Princeton Physics Lab
  - Wayne
- NEW MEXICO
  - Albuquerque DOE Operations
  - Ambrosia Lake
  - Bayo Canyon, Los Alamos
  - Inhalation Toxic Research Institute
  - Los Alamos National Lab.
  - Shiprock
- NEW YORK
  - Ashland Oil #1, Tonawanda
  - Ashland Oil #2, Tonawanda
  - B&L Steel, Buffalo
  - Brookhaven Nat'l Lab
  - Colonie
  - Linde Air Products, Tonawanda
  - Niagara Falls Storage Site, Lewiston
  - Niagara Falls Storage Site, Niagara Falls
  - Seaway Industrial Park, Tonawanda
  - West Valley Project
- OHIO
  - Alba Craft, Oxford
  - Associated Aircraft T & M, Fairfield
  - Baker Brothers, Toledo
  - Battelle Columbus
  - B&T Metals, Columbus
  - HHM Safe Site, Hamilton
  - Luckey
  - Mound Plant
  - Painesville
  - Portsmouth
- OREGON
  - Lakeview
- PENNSYLVANIA
  - Canonsburg
  - C.H. Schnoor, Springdale
- SOUTH CAROLINA
  - Savannah River Site
- TENNESSEE
  - Oak Ridge DOE Operations
  - Oak Ridge K-25 Site
  - Oak Ridge Nat'l Lab
  - Oak Ridge Reservation
- TEXAS
  - Falls City
- UTAH
  - Green River
  - Mexican Hat
  - Salt Lake City
- WASHINGTON
  - Hanford Site
- WYOMING
  - Riverton
  - Spook

23-Feb-95

BUDGET IMPACTS

Mr. Fazio. What impacts are likely if your budget is below the proposed level set in the president's submission?

Mr. Grumbly. The Department's budget projection is down $14.1 billion over the next five years. Of this amount, $8.4 billion is associated with program cuts while the balance is due to asset sales. The Environmental Management program budget reductions will account for the largest portion of this cut. For fiscal years 1997 through 2000 our request is being reduced by $4.4 billion in outlays, which translates into approximately $5.5 billion less in budget authority requests from previous Administration plans. These reductions are significant, but I believe achievable.

However, make no mistake that there are limits to how large and how fast budget reductions can happen without jeopardizing our ability to meet our legal and moral obligations to protecting human health and safety.

About 65 percent of our program budget is driven by compliance with legal obligations. About 25 to 35 percent of the budget is governed by vital, although non-legal, nuclear materials safety responsibilities. This leaves little room for further efficiency gains and establishes a point beyond which further budget cuts will go directly into the essence of our missions and undermine our efforts.

If our FY 1996 budget request amount is reduced substantially, we will be out of compliance with many of our legally enforceable agreements. This is perhaps the best-case scenario. As I mentioned above, we also have serious responsibilities for protecting public and worker safety in the nuclear materials area. Should our resources be seriously constrained, the result could be a drastic reduction in our ability to fully address the other problems we have such as seeing to it that thousands of contaminated buildings are stabilized, nuclear materials are not stolen, sabotaged, or released, and that our high-level radioactive waste and spent nuclear fuel does not pose threats to workers and the public.

STREAMLINING THE REGULATORY PROCESS

Mr. Fazio. Are there other examples of federal facilities that could act as a model for streamlining the regulatory process?

Mr. Grumbly. The Department of Energy is the lead federal agency of the Federal Advisory Committee to the Develop On-Site Innovative Technologies (DOIT) Committee. The DOIT Committee is a partnership involving the Western Governors' Association and its member states; tribal governments; the Departments of Interior, Defense, and Energy and the Environmental Protection Agency; public stakeholders; industry; and regulators. Their mission is to find solutions to barriers to cleanup activities at federal facilities. Those barriers include regulatory impediments that hamper interstate permitting and streamlining of technologies across federal facilities.

We recognize the successful models developed by other federal facilities such as the Air Force, Navy, Army, and Environmental Protection Agency to streamline the regulatory process. The valuable and creative ideas employed at site such as McClellan Air Force Base are models we are currently evaluating and applying to our processes. For example, we are initiating partnering and facilitated teamwork approaches at key field sites. As documented at other federal agencies, the benefits of facilitated teamwork are improved cleanups, improved partnerships, and streamlined regulatory processes. Employing these partnering models, we are inviting increased involvement and cooperation with EPA, the States, and the stakeholders.

We have also taken the initiative to streamline regulatory processes within the Department. Just as other federal agencies are doing or have done, the Secretary established a new policy relative to compliance with CERCLA and NEPA in an effort to streamline the integration of these two regulatory processes. By incorporating NEPA values into the technical review under the CERCLA process, we have not compromised the quality of the analyses or the merits of NEPA; we have simply eliminated conflicting procedural requirements. The Department is also in the process of reviewing its internal orders and consolidating and eliminating orders.

Working in concert with the Environmental Protection Agency, my staff is working on another key initiative, that of reducing overlap between CERCLA and RCRA. Generally, we have found that a single national approach may not be appropriate due to the differences in the states' RCRA authority. Instead, the Office of Environmental Management is currently developing guidance on the principles needed to resolve conflicts between federal CERCLA authority, federal RCRA authority, and state RCRA authority and suggestions on how to develop a reasonable approach at individual sites that is amenable to both the federal and state regulators, as well as the Department.

In summary, the Department recognized and values processes employed by other federal agencies to streamline the regulatory processes, and we are building upon this experience to apply successful models to the Department's environmental program.

DEVELOPING NEW TECHNOLOGIES

Mr. Fazio: What role do you play in the development of new technologies?

Mr. Grumbly: The Office of Environmental Management (EM) has a specific mission to aggressively develop improved technologies to: 1) reduce the cost of cleanup; 2) enable restoration which is not now possible or practical; and 3) reduce risks to workers, the public and the environment. The Office of Technology Development leads the efforts of EM to these ends. Our current request for technology development focusses on five problem areas:

Mixed Waste Characterization, Treatment, and Disposal. Our current inventory of mixed waste is currently 133,000 cubic meters, but up to 1.2 million cubic meters could be accumulated over the next five years. Available technologies are inadequate technically or regulatorily or both. Our goals for the mixed waste technology development program are to perform radioactive demonstrations as early as possible, and to pursue versatile treatment technologies (plasma and vitrification) as well as non-thermal treatment options.

Radioactive Tank Waste Remediation. DOE is responsible for 332 underground tanks containing highly radioactive and toxic materials. Many tanks are leaking and characterization, retrieval, and treatment are technically difficult. Our goals are to develop technology for analyzing tank structural integrity and waste; to develop and demonstrate technologies for retrieval of radioactive materials from tanks; and to develop radionuclide extraction technologies.

Contaminant Plume Containment and Remediation. An estimated 600 million gallons of ground water, and 200 million cubic yards of soils, are contaminated at DOE sites. Our goals are to develop in situ capability to treat soil and ground water contaminated with heavy metals and/or dense non-aqueous phase liquids (DNAPLs); and to develop technology to control the spread of contaminated plumes.

Landfill Stabilization. DOE landfills contain an estimated three million cubic meters of radioactive and hazardous buried waste. Containers have breached, contaminating surrounding areas. Our goals are to develop technology for containment and in situ stabilization of buried waste; and to develop technology for retrieval, characterization, contaminant control, and subsequent treatment of landfill waste.

Facility Deactivation, Decommissioning, and Material Disposition. DOE owns 1,200 contaminated buildings that require decommissioning and 5,000 contaminated buildings that require deactivation. Industry-accepted baseline processes will generate large volumes of contaminated materials and secondary wastes. Our goals for this program are to develop systems and processes for the deactivation, decontamination, decommissioning, dismantlement, and disposition of materials facilities.

Mr. Fazio. How do you promote those technologies without putting federal dollars at risk?

Mr. Grumbly. Environmental Management (EM) is involved in joint demonstrations projects with international organizations to enhance the early availability of improved technologies for our own complex cleanup and to facilitate international technology transfer. EM does not pursue foreign aid activities.

EM's Office of Technology Development (EM/OTD) has established a strong track record of leveraging its federal resources through cost-sharing with the private sector and other federal agencies. Private-public partnerships enable participants to share risk and more rapidly develop and demonstrate innovative environmental technological systems.

For example, the Western Governors' Association through its partnership called, Developing On-Site Innovative Technologies, or DOIT, involves the financial participation of 20 western states, industry, tribal nations, stakeholders, and four federal agencies (Departments of Defense, Interior, Energy and the Environmental Protection Agency) to develop and test new approaches to waste technology development and demonstration for mixed wastes.

Another partnership involves six private sector firms, the Air Force, Environmental Protection Agency, the State of Delaware and EM/OTD to perform full-scale demonstration of in-situ bioremediation systems. Demonstrations of EM/OTD's innovative technology are to be done on the Dover Air Force Base with the Air Force funding infrastructure costs; EPA and the State of Delaware are obtaining the permits. The government and industry are cost sharing the demonstration 50-50, and estimated cost savings are 50 to 75 percent of cleanup costs using conventional pump-and-treat technology in less than five years. DOE is leveraging its dollars greater than 10 to 1.

Mr. Fazio. What can this subcommittee do to facilitate the development of those technologies?

Mr. Grumbly. There are several major barriers that significantly interfere with development, demonstration, and commercialization of environmental remediation technologies. The subcommittee may be able to assist the executive agencies in addressing and/or removing some of the barriers. The major ones include: an unpredictable commercialization pathway; lack of entrepreneurial management by the Department; inconsistent, multi-level permitting processes at the federal, state, and local levels that create time-consuming and costly delays and bias the market toward local fragmentation; liability exposure and legal issues; a cumbersome, slow procurement process; lack of market opportunities identified for the private sector within the federal agencies; communication among the federal agencies and the private sector. In addition, incomplete cost and performance data, due in part to technology developers' inability to obtain access to demonstration sites, results in inadequate data for assessment of performance and economics by developers, investors, regulators, and potential users.

GENERAL

Mr. Frelinghuysen. What was your motivation in placing the Wayne, New Jersey, Thorium Site, which you have already begun to take action on remediating, on the prospective list of projects to be terminated?

Mr. Grumbly. The Wayne Site is not on the list of "projects to be terminated."The list of potentially affected sites we released was just that -- potentially affected. We do not intend to "terminate" environmental restoration operations at the Wayne site. Nonetheless, cutting this budget requires cutting individual site budgets, very likely including the Wayne site.

The list we released is based on the proposed $45 million rescission to our non-defense account. The impact of the proposed $45 million rescission is particularly severe because it is taken from the non-defense portion of our budget and it occurs at the midpoint of the fiscal year. As you know, non-defense spending accounts for less than 10 percent of the Environmental Management program budget. Hence, proportionately the cut has a much greater impact than a cut twice as large in the Defense account.

Also, because the proposed $45 million rescission occurs midway through the fiscal year, it will have an effect roughly double that of a similar cut taken from the full year. Consequently the proposed rescission would have the effect of an annual 17 percent cut in available relevant funding at numerous sites.

Our current plans, should the rescission pass, are to reduce activity and funding at the Wayne site by about 9 percent -- or approximately $374,700 from its FY 1995 appropriation of $4,163,000 -- somewhat below the national average resulting from this cut. This would lead to schedule slippages in completion of the work we conduct at Wayne and other Formerly Utilized Sites Remedial Action Program sites.

Statement of Thomas P. Grumbly

Assistant Secretary for
Environmental Management

U.S. Department of Energy

before

the Subcommittee on Energy and Water Development
of the
Committee on Appropriations

U.S. House of Representatives

March 8, 1995

Mr. Chairman, and Members of the Subcommittee, I appreciate this opportunity to appear before you to discuss the Department of Energy's Fiscal Year 1996 budget request for the Department of Energy's Environmental Management (EM) program. This program manages the human health and safety and environmental contamination consequences of the nation's fifty year nuclear weapons research, production, and testing program.

In my testimony, I will:

- Begin with some **background** of the Environmental Management program and describe the progress we have made and the challenges we face;
- Present an **analysis of the budget requests** for each program area, explaining the major activities, accomplishments, and commitments for each program; and
- Discuss some of the **new program initiatives and progress being made** toward achieving our strategic goals.

I. INTRODUCTION

Last year the Department submitted a budget request for the Environmental Management program that was essentially flat, halting the trend of increasing budget requests that had occurred since the program was established in 1989. This year, I can report that this trend is being reversed with our FY 1996 budget request, which represents a reduction from last year given a comparable work scope. We have made substantial progress in changing the way we do business and have achieved increased cost savings, efficiency gains, and productivity. All this translates into safer work conditions, better protection of public health and safety, and a cleaner environment, all at less cost to the taxpayer.

The Environmental Management program is playing a large role in contributing to a leaner federal government and deficit reduction in line with the President's proposed budget. The entire Departmental budget is being reduced by $10.6 billion over the next five years. The Environmental Management program budget request will account for a large portion of this reduction. For fiscal years 1997 through 2000 our request is being reduced by $4.4 billion in outlays, which translates into approximately $5.5 billion less in budget authority requests from previous Administration plans. These reductions are significant, but I believe achievable.

However, notwithstanding our commitment to continually improve efficiency and increase our productivity, there are limits to how much our budget can be reduced without jeopardizing public health and safety and our ability to comply with applicable laws and agreements. The Environmental Management program has broad responsibilities, one of which is securely storing more than 25 metric tons of plutonium -- the stuff of nuclear weapons -- to prevent theft, sabotage, or diversion. Although the environmental and waste management missions we have responsibility for include traditional environmental activities to protect public health and safety, a mistake in safeguarding this nuclear material could result in incalculable calamity on a global scale. Fortunately, the Department has been successful in preventing such acute problems. Nonetheless, nearly fifty years of nuclear weapons production have left us with a massive environmental legacy for which we have a moral and legal obligation to address.

Our FY 1996 request reflects an increased commitment to resolving the environmental and safety problems we face as well as a continued commitment to improve the way the Department has historically done business. Our request includes funding for significant new added responsibilities: management of the Savannah River Site in South Carolina, the Mound Site in Ohio, and the Pinellas Plant in Florida and nearly 50 other high risk facilities. The base budget, not including this additional scope of work, for Waste Management, Environmental Restoration, Nuclear Materials and Facilities Stabilization, Technology Development and other programmatic activities is actually four percent less than the amount appropriated in FY 1995.

BACKGROUND ON THE ENVIRONMENTAL MANAGEMENT PROGRAM

To fully understand the Environmental Management budget request, it is necessary to understand that the scope of the program involves far more than just "cleanup." The Department's Office of Environmental Management, established in 1989, manages the largest environmental stewardship program in the world -- with over 130 sites and facilities in over 30 states and territories -- estimated to cost several hundred billion dollars over several decades. The number of sites and facilities under our management continues to grow as more buildings become surplus. The nuclear weapons production complex alone is spread over thousands of square miles in 13 states. This complex shut down its nuclear weapons production operations in the late 1980's, leaving a legacy of thousands of contaminated areas and buildings, huge waste volumes, and a large amount of hazardous nuclear materials still "in the pipeline" of their production processes. The Environmental Management program's job is to address the most immediate, urgent risks to human health and the environment as well as manage the long-term contamination and safety threats.

Simply said, our job is to safely administer the sites, facilities, and operations under our management. However, the task is far easier described than carried out. To illustrate, we deal with a wide variety of threats and risks such as:

- hundreds of large, underground high-level radioactive waste tanks, many of which have leaked, and some of which may pose danger of an explosion;
- thousands of metric tons of highly radioactive spent nuclear fuel in various types of storage, some corroding; and
- thousands of radioactively contaminated buildings that must be stabilized and eventually decontaminated.
- contaminated drinking water, soils, and surface water;
- worker exposure to radiation and chemicals;
- theft or diversion of nuclear weapons material (e.g., plutonium and highly enriched uranium);
- industrial and transportation accidents;

We simultaneously satisfy a wide variety of demands:

- compliance with state and federal laws and regulations;
- compliance with negotiated agreements stemming from those regulations or court orders;
- International Atomic Energy Agency nuclear nonproliferation safeguards requirements;
- Defense Nuclear Facilities Safety Board "Recommendations";
- Worker safety and health protection expectations derived from OSHA, nuclear industry, and Departmental practices;
- Short- and long-term technology development needs; and
- Worker and community development needs (e.g., training and land reuse);

The task ahead remains formidable, and yet presents many opportunities for improving upon how we, as a nation, respond to the challenges of remediating the environmental legacy of almost five decades of nuclear weapons production. While the full nature and extent of contamination at the sites may not be fully known for many years, we are taking some tangible steps now to identify and mitigate their environmental and health risks.

For example, our technology development efforts help us to better understand, in a more cost-effective manner, the type and extent of the environmental and safety risks at our sites -- a necessary first step in the process of remediating these problems, such as dealing with plutonium in various forms and spent nuclear fuel rods. Technology development also addresses the chief concerns and lessons learned since the establishment of the Environmental Management program and through the Superfund experience. These include the lack or inadequacy of existing technologies to fully remedy many of our complex environmental problems, as well as the staggering cost of some of these technologies; the lack of data available to fully characterize the risks; and the problem of no consensus on standards for remediation.

MAKING PROGRESS

I would now like to highlight some of the Environmental Management program's accomplishments.

The Department of Energy's Environmental Management program is making significant strides in reducing the environmental and public health risks and hazards from more than fifty years of nuclear weapons production, testing, and research. These results not only demonstrate significant progress, but also reflect a new way of doing business by addressing urgent risks first while simultaneously managing the long-term contamination and health risks present at our sites. For example, in the last year we have addressed urgent risks in the following areas:

- Completed safety improvements to a building and begun to stabilize inventories of pyrophoric plutonium contained inside it at the Rocky Flats Plant in Colorado in FY 1995. This material poses a fire hazard since, under certain conditions, plutonium ignites in air;
- Safely transferred 199 spent nuclear fuel elements to safer storage facilities in Idaho; and
- Returned 153 spent nuclear fuel elements containing weapons-grade uranium of United States origin from foreign research reactors. Accepting these fuel elements helps support the Nation's nuclear nonproliferation policy because they contain weapons-usable highly-enriched uranium;
- Began routine operation of a pump that has virtually eliminated the threat of explosion in a high-level waste tank at our Hanford site.

We have also achieved impressive cumulative results that begin to reduce the backlog of accumulated waste and long-term contamination problems across the country:

- Decommissioned approximately 100 facilities across the complex;
- Cleaned up 16 former nuclear weapons and industrial sites and 14 sites associated with uranium mining and milling;
- Remediated over nearly 5,000 public and private properties contaminated with uranium tailings;
- Treated 2.4 billion gallons of ground water and 1.8 billion gallons of surface water;
- Recycled 16 million pounds of scrap metal;

- Safely transported roughly one million tons of hazardous materials in 140,000 shipments; and
- Saved over $115 million through the use of new technologies.

CHANGING THE WAY WE DO BUSINESS

These achievements demonstrate real progress in meeting our legal and moral obligations. However, inefficiencies still exist in our system, and there is room for more improvement. Also, given the downward trend in funding for the Department's Environmental Management program, we cannot afford to become complacent. To make up for this year's real budget reductions, and to continue to seize opportunities for increasing productivity, we must continue to be smarter about the way we operate through increasing efficiency and eliminating wasteful spending by hiring experienced federal project managers, streamlining our contractor workforce, reducing indirect and overhead labor costs, and reforming our contracts. For example:

- We have hired 1,200 experienced project managers, cost estimators, safety and health professionals, and environmental engineers to provide greater accountability and oversight at our sites. Years of Congressional oversight and hearings on wasteful spending and poor health and safety practices were the impetus. In return for additional staff, field office managers have committed to specific productivity savings.

- We are reducing the number of contractor employees by a total of about 17,500 -- about 34 percent -- from FY 1994 to FY 1996. We are downsizing our workforce in accordance with Section 3161 of the Defense Authorization Act of 1993 to mitigate adverse effects of such layoffs. In making these cuts, we have tried to the extent possible to be equitable across our sites. However, there are particular sites where significant productivity improvements are possible to correct particularly inefficient operations. The Rocky Flats Plant in Colorado and the Idaho National Engineering Laboratory are taking about 35 and 30 percent reductions of their total workforce, respectively; the Hanford Site in Washington and the Savannah River Site in South Carolina are reducing their workforce by 26 and 22 percent, respectively (see attached chart).

- We are recompeting and renegotiating 30 billion dollars worth of contracts to include greater incentives for outstanding performance and to ensure that the contractors -- not the taxpayers -- take on a larger share of the risks associated with doing business with the Department. A recently completed consolidation of our Idaho contract is projected to save $500 million over the next five years.

By instituting these changes, we believe that our program will be able to meet its legal commitments during FY 1996, with a few exceptions that we have already begun working with State regulators to resolve.

Our program will continue to be driven by a results-oriented, risk-based approach that seeks to address the most urgent public health and safety problems first. However, after this fiscal year, even with the continued productivity savings that are expected, there will be a gap between available resources and requirements in the future. In order to continue to meet our obligations, we will need to address these outyear challenges with new analytical tools, renegotiation of some of our compliance agreements, and through statutory changes.

To help shape a smarter, more productive program, we are responding to several Congressional requirements by developing analytical and informational tools:

- Baseline Environmental Management Report will be submitted to Congress at the end of March. This is the Department's first attempt since 1988 to estimate the total life-cycle costs and schedules to complete its Environmental Management missions. It will also examine the potential impacts on cost of several factors, including future land use, residual contamination standards, and technology development.

- Risk Report will be submitted to Congress in June. While we're making progress in this program, we realize that we must have a better understanding of the risks and how those risks are reflected in our compliance agreements. This report presents an evaluation of the risks to the environment, workers and the public posed by Departmental facilities that are currently subject to compliance agreements.
- Environmental Management Annual Cost and Variance Report to Congress describes progress by the program across the country at our sites, including cost and schedule performance information.

With these tools we expect to improve our ability to plan the long-term future of the program.

These managerial initiatives are bold and necessary to increase productivity, and the tools we are using to plan for a better future will reduce costs. But these are not sufficient to ensure success in the future. We still face a real reduction in budget relative to scope of work this year, and even deeper reductions in later years. Therefore, another way in which we are ensuring that we continue to meet our legal obligations is by working with regulators to make appropriate changes to compliance agreements and asking for appropriate changes in regulations that apply to the Department such as the Comprehensive Environmental Response, Compensation, and Liability Act or "Superfund" law. Changing this law to account for future land uses will help promote faster turn around times in some cleanup actions, and will save money.

Let me emphasize that the Department is committed to complying with the laws that apply to its sites and operations. The Environmental Management program will be in substantial compliance in FY 1996 with these agreements if Congress appropriates the President's budget request. However, many of our compliance agreements were signed during a climate much different from the one we have today. Some of the milestones and schedules for completion are unworkable. Recognizing this, it is a reasonable, and indeed sensible, thing to do to work cooperatively with the States, stakeholders, and EPA to renegotiate those agreements as appropriate to align them more with current fiscal reality. Also, our goal in renegotiating these agreements is to ensure that they will achieve the greatest risk reduction and risk prevention per dollar spent.

The outlook for the Environmental Management program depends on many things. I have described the managerial changes we are implementing to address the challenges we face given declining resources. I have also outlined the focus on urgent risk reduction in prioritizing a results-oriented program. However, the scope of the Environmental Management program demands a national debate to help set priorities and directions for the future. Some of the issues that I believe we need to work on together include the following:

- *We need to reconsider the pace and long-term schedule for the Environmental Management program.* In 1989, the Administration committed to a 30-year program. Now, preliminary analysis indicates that such a schedule is neither feasible nor wise. We need to consider carefully how to pace different aspects of the program. Our near-term goals need to address our urgent risks such as the Hanford waste tanks, spent nuclear fuel, and stabilizing nuclear materials and facilities to reduce maintenance costs. In addition, we need to invest in new technologies so that we have more effective and less costly remedies in the future. We need to think carefully about the risks and benefits of each alternative before selecting a particular course. In fact, the decision will not be a single one, but will be thousands of individual decisions based on the best information we can obtain on risks, costs, and schedules.

- *We lack a rational and timely process to allocate funds given in the event of a shortfall.* I know that the Federal Facilities Environmental Restoration Dialogue Committee -- the "Keystone" group in which the Department participated -- recommended in 1993 that a *pro rata*

> allocation be made among compliance-related budget areas for environmental restoration and related activities. First, environmental restoration activities are only one part of our budget and other activities such as waste management and facility stabilization need to be considered in the allocation of cuts. Also, although this process is appealingly simple, it does not take into consideration differences between sites such as efficiency, risk or opportunities to make progress.

With respect to the last point, we plan to take a step toward a more efficient budget allocation process this year. We propose a pilot project at Rocky Flats to implement a site-based budget, rather than allocating funds through the traditional program organizational elements. The goal of this initiative is to provide sufficient flexibility to the site to ensure that funds are allocated to the highest priorities after the appropriation process is completed to address urgent risks or to make investments to reduce long-term maintenance costs. Site managers will be better able to work cooperatively with their local regulators and stakeholders to develop priorities that make sense for the site. These changes allow site managers to be more responsive to changing needs or site conditions, and avoids the cumbersome budget reprogramming process currently used. If this pilot proposal is approved and successful in FY 1996 at Rocky Flats, I plan to expand this budget technique to all sites for FY 1997.

In addition, we are exploring other options with respect to budgeting and priority setting that could help reduce total program costs and better focus technical expertise. These options are at the early stages of development, but could have the potential to dramatically change and improve how we conduct business, how much it costs, and how long it takes.

II. ANALYSIS OF THE ENVIRONMENTAL MANAGEMENT BUDGET BY PROGRAM AREA

The FY 1996 budget request is being proposed under three separate appropriations accounts: the Energy Supply and Research Development appropriation (roughly 10 percent of the budget request); the Defense Environmental Restoration and Waste Management appropriation portion of the Atomic Energy Defense Activities account (roughly 87 percent of the budget request); and the Uranium Enrichment Decontamination and Decommissioning (D&D) Fund appropriation (roughly 3 percent of the budget request).

The Department's FY 1996 budget request for the Environmental Management program totals $6,591,741,000. This includes $843,000,000 for new responsibilities primarily at three sites -- Mound, Pinellas, and Savannah River -- transferred to the Environmental Management account from the Defense Programs account. Management responsibility for the Savannah River Site, Mound, and Pinellas was transferred to Environmental Management in January, 1995. Given a comparable work scope, this request represents a reduction of 4 percent from the FY 1995 baseline appropriation. The information on the FY 1996 budget request follows in Table 1.

TABLE 1
ENVIRONMENTAL MANAGEMENT
Fund Summary (in $ Millions)

	FY 1995	FY 1996	Percent Change
Waste Management			
Defense	2,673.1	2,501.6	-6.4
Non-Defense	243.0	206.1	-15.2
Total	2,916.1	2,707.7	-7.1
Corrective Activities			
Defense	$ 0.5	3.4	+580.0
Non-Defense	26.7	5.4	-79.8
Total	27.2	8.8	-67.6
Environmental Restoration			
Defense	1,379.9	1,576.0*	+14.2
Non-Defense	388.6	417.8	+7.5
Total	1,768.5	1,993.8	+12.7
Uranium D&D Fund			
Non-Defense	301.3	288.8	-4.1
Nuclear Materials and Facilities Stabilization			
Defense	765.5	1,596.0	+108.5
Non-Defense	73.4	83.7	+14.0
Total	838.9	1,679.7	+100.2
Technology Development			
Defense	417. 4	390.5	-6.4
Transportation Management			
Defense	20.7	16.1	-22.2
Compliance and Program Coordination			
Defense	0	81.3	+100.0
Analysis Education and Risk Management			
Defense	84.9	157.0	+84.9
Use of Prior Year Balances and Other Adjustments			
Defense	- 249.3	-313.9	+25.9
Non-Defense	- 8.2	-68.1	+730.5
Total	- 257.5	-382.0	+48.3
Transfer Government Contribution to Uranium Enrichment D&D from ER Defense	-133.7	-350.0	+161.8

	FY 1995	FY 1996	Percent Change
APPROPRIATION BREAKDOWN			
Defense	5,092.7	6,008.0	+18.0
Energy Supply	723.5	689.9	-4.6
Uranium D&D Fund	167.6	-106.2	-163.4
TOTAL**	5,983.8	6,591.7	+10.2

* Includes $350 million for Government contributions to the Uranium Enrichment D&D Fund. Actual change from 1995 to 1996 for the Defense budget is -2%.

** This includes $843 million for newly transferred responsibilities. The base budget request without these new responsibilities is $5.748 billion, a 4 percent reduction from last year's enacted amount.

The Environmental Management program's budget is broken down into four primary activity areas. These are the first four shown in Table 1. The program also has Transportation Management, Compliance and Program Coordination, and Analysis, Education and Risk programs. The Transportation Management program, comprising less than 1 percent of the total Environmental Management budget, is responsible for the safe, secure, and cost-effective transport of Departmental materials, including hazardous and radioactive substances. The program also assures that all Department shipments comply with applicable regulations and operating procedures and guidelines. The Office of Compliance and Program Coordination, which accounts for about 1 percent of the total program budget, provides independent monitoring and appraisal, programmatic guidance, integrated performance analysis and technical assistance for the Environmental Management program's environment, safety, and health, engineering, cost evaluation, technical operations, transportation management, emergency management and other functions. The program-wide perspective of this office provides line organizations with an understanding of their implementation of applicable regulatory and technical requirements. The Analysis, Education and Risk Management part of the budget, approximately 2 percent of the total program, includes transfers of some former Office of

Technology Development programs. Although a very small portion of the budget request, Analysis, Education and Risk Management supports essential activities such as analyzing current and long-term costs; formulating risk assessment and risk integration activities; developing policy; administering, formulating and executing the budget; conducting strategic, long-range planning; monitoring and evaluating contractor performance; conducting employee and public education programs; and providing links between the Department and other agencies, Congress, environmental and other stakeholder groups, and the private sector.

As we take on greater responsibility from other Departmental elements, we are requesting more funding for our Nuclear Materials and Facilities Stabilization program (formerly Facility Transition) which includes thousands of former Defense Program (DP) facilities that are no longer needed for nuclear weapons production. Significant funding is required to safely stabilize and maintain surplus nuclear weapons facilities while they await decontamination and decommissioning. Detailed breakouts of each of the four primary program areas appear below.

WASTE MANAGEMENT

BUDGET REQUEST: $2,716,551,000
37.0% of the total program budget

Major Activities

Waste management activities of the Environmental Management program comprise the largest portion -- over a third -- of the total budget request. (See Tables 2 and 3 for a breakdown of the Waste Management budget.) The program's activities include managing the treatment, storage and disposal of wastes, and working to minimize the amount of new wastes generated. The Department is faced with a variety of wastes, including high-level radioactive waste (such as the waste found in the Hanford tanks), transuranic waste, low-level radioactive waste, hazardous waste, and mixed waste (both radioactive and hazardous). The Waste Management program is also responsible for managing the Department's spent nuclear fuel. Some 2,700 metric tons of highly radioactive spent fuel is stored at various sites around the country. Some of the fuel is corroding, and some has been in storage for as long as thirty years -- far longer than the planned storage time for this material.

In addition to maintaining safe storage the Department continues to operate treatment and disposal facilities while developing badly needed additional treatment and disposal capabilities. Examples of these projects include the Tank Waste Remediation System at Hanford, Washington; the Defense Waste Processing Facility and related high-level waste tank farm operations at the Savannah River Site, South Carolina; the West Valley Demonstration Project in New York; and the development of Site Treatment Plans with the 22 States where the Department stores or generates mixed waste.

Part of the waste management budget is funding for "corrective activities." In 1989, approximately 175 active and standby facilities were identified as being out of compliance with applicable local, state and federal regulations. Corrective activities are conducted to bring these facilities into compliance as rapidly as possible. This portion of the budget has declined dramatically since 1991, when the appropriation was nearly $200 million, to this year's request of roughly $9 million. This declining budget reflects the success of this program in bringing the Department's facilities into compliance with applicable environmental regulations. For FY 1996, only three projects under the Corrective Activities budget require funding for completion: the Hazardous Waste Treatment Facility at the Los Alamos National Laboratory, and two construction projects related to low-level radioactive waste at the Oak Ridge National Laboratory. Some of the environmental laws that the Department must comply with include the Resource Conservation and Recovery Act, the Clean Air Act, the Safe Drinking Water Act, and the Toxic Substances Control Act. These are the same laws that the government expects private industries to comply with to protect human health and the environment. Unless and until Congress amends these laws, the Department has a legal and moral obligation to comply with these laws and to request adequate funding to do so. This basic principle is codified in Executive Order 12088.

TABLE 2
WASTE MANAGEMENT AND CORRECTIVE ACTIVITIES
Defense Funding Summary
(Dollars in Thousands)

Activity	FY 1995	FY 1996
Program Management	$ 184,113	$ 141,778
Facility Operations and Maintenance	1,236,258	1,178,891
Former Defense Program Facilities	62,060	171,085
New Facilities	708,786	566,040
Defense Waste Processing Facility	234,648	178,651
Hanford Waste Vitrification Plant	442	0
Waste Isolation Pilot Plant	174,323	172,700
Program Direction	72,417	92,451
TOTAL, Waste Management-Defense	2,673,047	2,501,596
CORRECTIVE ACTIVITIES		
TOTAL, Corrective Activities-Defense	$ 512	$ 3,406
TOTAL, Corrective Activities/Waste Management - Defense	$2,673,559	$2,505,002

TABLE 3
WASTE MANAGEMENT AND CORRECTIVE ACTIVITIES
Non-Defense Funding Summary
(Dollars in Thousands)

Activity	FY 1995	FY 1996
Program Management	$ 4,242	$ 4,193
Facility Operations and Maintenance.	71,191	63,290
New Facilities.	34,979	10,562
West Valley Demonstration Project.	125,127	122,100
Low-Level Waste	7,477	6,000
TOTAL, Waste Management-Non-Defense.	$243,016	$206,145
TOTAL, Corrective Activities, Non-Defense.	$ 26,700	$ 5,404
TOTAL, Corrective Activities and Waste Management, Non-Defense.	$269,716	$211,549
GRAND TOTAL, Waste Management	$2,943,275	$2,716,551

Selected Accomplishments in Waste Management FY 1994

In Idaho:

-- Treated 700,000 gallons of liquid high-level waste to convert into a more stable, dry calcine form at the New Waste Calcining Facility.

In Nevada:

-- Began shipments of low-level waste from Rocky Flats to the Nevada Test Site for disposal. Low-level waste has been accumulating at Rocky Flats since 1990 when the last shipments were made.

In New Mexico:

-- Began the retrieval of buried transuranic waste at Los Alamos National Laboratory to place in a compliant above-ground configuration;

In Washington:

-- Reduced the volume of high-level waste in tanks at Hanford by 5.2 million gallons after treatment with the 242-A Evaporator system; and

-- Completed the construction and began operating the Treated Effluent Disposal Facility at the Hanford site. This facility provides continuous treatment and disposal of liquid effluent from the 300 Area. All discharges of effluent to the 300 Area Process Trenches has ceased.

In New York:

-- Completed the transfer and neutralization of acid high-level waste at the West Valley site in preparation of vitrification.

In Tennessee:

-- At the Oak Ridge Reservation, we treated over 5 million pounds of mixed waste (both radioactive and hazardous) in 1994 at the Toxic Substances Control Act (TSCA) Incinerator, exceeding both the requirements of the Oak Ridge Federal Facilities Compliance Agreement and the performance in 1993 which was 3.6 million pounds. These wastes originated from operations at our sites in Oak Ridge, Tennessee; Portsmouth, Ohio; and Paducah, Kentucky.

-- Also at Oak Ridge, we treated 40 million gallons of wastewater at the K-25 Gaseous Diffusion plant's Central Neutralization Facility. This facility treats wastewater from the TSCA incinerator that contains radioactive and/or hazardous constituents in accordance with the National Pollutant Discharge Elimination System permit.

In South Carolina:

-- At the Savannah River site, newly constructed low-level radioactive waste vaults began accepting waste. These vaults provide improved containment and protection of the area's relatively shallow water table, and represent the evolution of low-level disposal away from engineered trenches;

-- After the restart of an evaporator system at Savannah River, over 1 million gallons of high-level waste was processed to reduce volume and create additional storage space; and

-- Commenced radioactive operations of the In-Tank Precipitation facility and completed washing of Sludge Batch #1 at the Extended Sludge Processing Facility to prepare feed for the DWPF.

Priorities and Challenges for FY 1996 in Waste Management

- **Begin operations** at the Defense Waste Processing Facility at Savannah River and at the West Valley vitrification facility.
- **Finalize** the EPA compliance plan for the Waste Isolation Pilot Plant in New Mexico.
- **Continue to safely manage and treat** the 61 million gallons of liquid high-level radioactive waste stored in 177 underground tanks at the Hanford Site in Washington.
- **Continue to improve** management and storage of all DOE spent nuclear fuel while implementing decisions of the complex-wide Spent Nuclear Fuel Environmental Impact Statement.
- **Implement Site Treatment Plans** for mixed waste under the Federal Facility Compliance Act, and plan for the storage and disposal of treated mixed low-level waste.

ENVIRONMENTAL RESTORATION

BUDGET REQUEST: $1,993,731,000
27% of the total program budget

Major Activities

The Office of Environmental Restoration is responsible for the assessment and remediation of facilities and land no longer used for nuclear weapons production, as well as other inactive sites. These sites range from contaminated buildings to abandoned or inactive waste disposal sites. It is this portion of the overall Environmental Management program that is often described as the "cleanup" program.

Remedial action requirements are derived primarily from the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the Resource Conservation and Recovery Act (RCRA), and are carried out in compliance with the National Environmental Policy Act (NEPA).

The Formerly Utilized Sites Remedial Action Program (FUSRAP) and the Uranium Mill Tailings Remedial Action program (UMTRA) are also managed under the Environmental Restoration program.

We are continuing to move away from doing studies to engaging in actual cleanup. Almost 40 percent of the Environmental Restoration budget request for FY 1996 will fund remediation -- groundwater and soil restoration, and decontamination and decommissioning of facilities. A little over 15 percent of the budget request is for the Government Contribution to the Uranium Enrichment Decommissioning and Decontamination Fund, and a smaller portion is allocated for surveillance and maintenance activities, and landlord functions at the Fernald site and the Oak Ridge, Tennessee K-25 site. Most of the remaining budget is allocated to characterization and assessment of the nature and extent of environmental problems at our sites. In the coming years we will continue to devote even greater resources to environmental risk reduction and fewer resources to environmental assessments. (Information on the breakdown of the Environmental Restoration budget follows in Table 4.)

TABLE 4
ENVIRONMENTAL RESTORATION
Funding Summary
(Dollars in Thousands)

SUBACTIVITY	FY 1995	FY 1996
DEFENSE		
Facilities and Sites	$1,379,924	$1,575,973
Subtotal, Defense	$1,379,924	$1,575,973
NON-DEFENSE		
Facilities and Sites	219,380	244,758
Formerly Utilized Sites Remedial Action Project	74,100	85,200
Uranium Mill Tailings Remedial Action Project	88,117	80,000
Uranium Mill Tailings Groundwater Restoration Project	7,000	7,800
Subtotal, Non-Defense	$ 388,597	$ 417,758
Uranium Enrichment D&D Fund	$ 301,327	$ 288,807
TOTAL, ENVIRONMENTAL RESTORATION*	**$2,069,848**	**$2,282,538**

***This total includes $288.8 million for the Uranium Enrichment D&D Fund. The total for Environmental Restoration programs without this fund is $1,993,731,000.**

By the end of FY 1996, we expect to have completed the remediation of almost 99 percent of the Uranium Mill Tailing Remedial Action (UMTRA) program's vicinity properties. As of now, we have cleaned up over 4,700 UMTRA vicinity properties, removing in excess of 2,400,000 cubic yards of contaminated materials.

The major activities of the Environmental Restoration program are as follows:

- At over 30 major DOE installations, safe management and remediation of contaminated sites, characterization, remedial action, decontamination and decommissioning, and closure activities.

- Formerly Utilized Sites Remedial Action Project (FUSRAP), which currently includes 41 former Manhattan Project or Atomic Energy Commission sites and five other sites added by Congress.

- Uranium Mill Tailings Remedial Action (UMTRA) Project, which conducts remediation of 24 inactive uranium mill tailings sites that provided uranium for past Manhattan Project and Atomic Energy Commission activities, as well as more than 5,000 associated vicinity properties.

- Uranium Mill Tailings Groundwater Compliance Project, which will restore, as necessary, the groundwater at the 24 UMTRA processing sites to ensure compliance with EPA standards.

- Uranium Enrichment Decontamination & Decommissioning (D&D) Fund, which provides for D&D, remedial actions, site-wide landlord requirements, and surveillance and maintenance efforts at the uranium enrichment facilities at Portsmouth, Ohio, and Paducah, Kentucky, and the inactive K-25 site at the Oak Ridge Reservation in Tennessee. This is also the source of funds for reimbursing a portion of the remedial action costs at active uranium and thorium mill sites as required by Title X of the Energy Policy Act of 1992.

Selected Accomplishments in Environmental Restoration

- 16 out of 46 Formerly Utilized Site Remedial Action Program (FUSRAP) sites (about 35%) have been cleaned up;

- 14 out of 24 Uranium Mill Tailings Remedial Action Program (UMTRA) sites have been completed, nearly 60%. Over 27 million cubic yards of mill tailings have been removed and disposed;

- 119 remedial action projects have been completed, with an additional 111 underway;

- 16 million pounds of scrap metal have been recycled; and

- 2.4 billion gallons of ground water have been pumped and treated and 1.8 billion gallons of surface water have been treated to reduce contaminants.

Priorities and Challenges in Environmental Restoration

In FY 1996, the Environmental Restoration program will:

- Complete 100 interim cleanup actions, such as early removals and expedited responses;
- Complete 20 remedial action projects;
- Complete 12 interim decommissioning and decontamination actions;
- Complete 6 UMTRA cleanups and begin cleanup at the final 2 sites; and
- Complete 2 FUSRAP cleanups.

NUCLEAR MATERIALS AND FACILITIES STABILIZATION

BUDGET REQUEST: $1,679,711,000
23% of the total program budget

Major Activities

The mission of the Office of Nuclear Materials and Facilities Stabilization is to reduce the high-risk conditions associated with unstable excess nuclear and chemical materials left intact at former nuclear weapons production facilities and reduce the maintenance costs associated with stabilizing buildings awaiting decontamination or final disposition. More specifically, this involves the protection of workers and environment from exposure and contamination, stabilization of hazardous nuclear and chemical materials, deactivation of facilities to attain the lowest surveillance and maintenance costs, and disposition of facilities to the Office of Environmental Restoration for decontamination and decommissioning.

With the end of the Cold War, a large amount of extraordinarily hazardous nuclear materials and a large number of facilities have become surplus and require stabilization prior to decontamination and decommissioning. These facilities typically require extensive surveillance and maintenance, as well as associated "landlord" activities such as utilities and fire safety functions. In addition, the Department will continue to incur costs for these activities until the nuclear materials are stabilized and removed. Approximately 4500 facilities have already been transferred to the Environmental Management program for stabilization. Another 1,200 are expected between now and FY 1999. Nuclear materials will require a variety of chemical processing activities, repackaging operations, and performing surveillance, maintenance, and safeguards activities. Surplus facilities, once stabilized, will require decontamination and decommissioning (D&D).

In FY 1996, the Environmental Management program's responsibilities in the Nuclear Materials and Facilities Stabilization program area will double as the result of transferring the responsibility for Savannah River Site in South Carolina, the Mound Site in Ohio, and the Pinellas site in Florida from Defense Programs to the Environmental Management program, as well as approximately fifty high-risk facilities at other sites in several states. These new responsibilities will include repair and operation of some facilities, stabilizing nuclear materials that pose a significant risk in their current form or location, producing radionuclides for Departmental missions, and developing new ways of operating complex facilities. This is the fastest growing program within the Office of Environmental Management. The carrying costs for these facilities are enormous and will continue to increase until the nuclear materials are stabilized and/or removed. The landlord responsibilities -- including fire safety, utilities, roadway maintenance, and security -- and surveillance and maintenance costs, for which the Office of Nuclear Materials and Facilities Stabilization is responsible, is in excess of $1 billion. This is about 70 percent of the Office's budget.

Our budget request for Nuclear Materials and Facilities Stabilization reflects the overall strategy of the Environmental Management program to stabilize nuclear materials and facilities, recognizing that we can not "cleanup" all of our facilities at once. Let me emphasize that this is one area in which inaction on our part could have serious near-term consequences on worker health and safety and the quality of the environment. Significant funding is needed to safely stabilize these facilities in order to reduce the cost of maintaining the surplus facilities awaiting decontamination.

Our budget request for FY 1996 includes funding for four principal sites:

- **Savannah River Site, South Carolina.** As of January, 1995, the Environmental Management program became the primary site manager, or landlord, at Savannah River. The site budget request of $685 million in FY 1996 is needed to safely conduct a range of operations. One urgent risk to workers at the site is the presence of nuclear materials in solution in the F-Canyon.

- **Rocky Flats Plant, Colorado.** $393.8 million is allocated for the program's operations, including the stabilization of 100 kilograms of pyrophoric plutonium, thus reducing the risk of fire. Also, the stabilization of about 375 gallons of acidic weapons-grade uranium liquids is planned.

- **Hanford, Washington.** Safe stabilization of plutonium with minimal worker exposure at the Plutonium Finishing Plant is planned, as is the removal of the remaining radioactive and hazardous chemicals from the PUREX facility to place the facility in a safe and stable, low maintenance condition, and to reduce out-year surveillance and maintenance costs. The funding request for FY 1996 is $286.1 million.

- **Idaho National Engineering Laboratory.** We are working to stabilize uranium and liquid acidic solutions to significantly reduce out-year maintenance costs and have requested $162.1 million for FY 1996. Leakage from aging pipelines could result in unsafe and costly contamination.

Additional Nuclear Materials and Facilities Stabilization site responsibilities include high risk facilities at:

- Brookhaven National Laboratory, NY; Argonne National Laboratory - East, IL; Los Alamos National Laboratory, NM; ETEC, CA; Oak Ridge, TN; Mound near Dayton, OH; and Pinellas, FL.

Information on the Nuclear Materials and Facilities Stabilization budget follows in Table 5.

TABLE 5
NUCLEAR MATERIALS and FACILITIES STABILIZATION
Funding Summary
(Dollars in Thousands)

Activity	FY 1995	FY 1996
DEFENSE		
(1) Program Integration	$ 29,590	$ 63,299
(2) Surveillance and Maintenance	268,010	542,733
(3) Deactivation/Compliance	124,868	208,719
(4) Landlord	232,335	539,294
(5) Program Management	53,940	144,681
(6) Program Direction	56,774	97,302
Total, Defense	765,517	$1,596,028
NON-DEFENSE		
Program Integration	$ 1,200	$ 2,916
Surveillance and Maintenance	54,313	40,217
Deactivation/Compliance	17,823	40,550
Subtotal, Non-Defense	73,336	83,683
Total, Nuclear Materials/Fac. Stab.	$838,853	$1,679,711

(1) Program Integration refers to planning, site characterization, and other activities associated with assuming management responsibility for a site.

(2) Surveillance and Maintenance refers to periodic inspection of items such as HEPA filters, tank levels, and waste drum conditions to ensure safe operations of the facilities.

(3) Deactivation/Compliance refers to activities associated with the removal of hazardous and radioactive material, equipment, etc., to reduce the hazard classification of the facility.

(4) Landlord refers to activities that cut across an entire site, such as medical and fire-fighting services, electricity, sewer, and water.

(5) Program Management refers to contract support directly related to facilities transition and management.

(6) Program Direction refers to salaries and other direct costs of Federal employees.

Selected Accomplishments of the Nuclear Materials and Facilities Stabilization Program

At Rocky Flats, Colorado:

- Initiated shipment of low-level waste generated at Rocky Flats to the Nevada Test Site and continued shipments to Hanford;
- Completed renegotiation of interagency agreement with the State of Colorado and the Environmental Protection Agency; and
- Completed solidification of 375 bottles of dilute plutonium solutions.

At Richland, Washington:

- Completed deactivation of the Uranium Tri-Oxide plant;
- Reduced the contaminated area of PUREX by 420,000 square feet, approximately 90 percent of the total area; and
- Remediated the plutonium bearing ductwork in support facility at the Plutonium Finishing Plant.

At Idaho National Engineering Laboratory, Idaho

- Completed the uranium accountability at the Idaho Chemical Processing Plant's Buildings 601 and 602, part of the facility's uranium recovery line;
- Completed the deactivation of the second and third cycle extraction processes at the Idaho Chemical Processing Plant (ICPP); and
- Completed the deactivation of the ICPP denitrator process stabilizing 12,000 liters of liquid uranium inventories.

Priorities and Challenges for Nuclear Materials and Facilities Stabilization

At Rocky Flats, Colorado:

- Thermally stabilize 100 kilograms of pyrophoric plutonium oxides to eliminate the risk of fire;
- Convert 1,400 liters of nitrate solutions comprising 275 kilograms of 93.2% highly enriched uranium to a solid form; and
- Complete filtered venting of 2,000 drums containing plutonium materials to prevent explosion and possible failure of containment.

At Richland, Washington:

- Complete 78% of the Plutonium-Uranium (PUREX) deactivation project;

- Disposition 947,000 liters of surplus uranium contaminated nitric acid; and
- Complete 75% defueling of the Fast Flux Test Facility (FFTF) reactor.

At Idaho National Engineering Laboratory, Idaho:

- Initiate deactivation of the Idaho Chemical Processing Plant dry end process including removal of up to 150 kilograms of uranium in graphite ash; and

- Complete definitive design for deactivation of calcine cell within the Old Waste Calcining Facility.

At Savannah River, South Carolina:

- Complete stabilization of 300,000 liters of plutonium 239 solutions in F Canyon; and

- Complete the stabilization of 1,600 liters of Pu-242 solutions and 16,000 corroding plutonium targets pending completion of the Interim Nuclear Material Management Environmental Impact Statement.

TECHNOLOGY DEVELOPMENT

BUDGET REQUEST: $390,510,000
5.3% of the total program budget

Major Activities

Developing new technologies to address the environmental challenges in the former nuclear weapons complex is an integral part of the Environmental Management program. This program also reflects our strategy of investing in technology development to develop long-term effective methods for addressing environmental challenges. The goals of our technology development program include reducing risks to people and the environment, reducing cleanup costs, and finding new technologies to environmental problems for which no solutions currently exist. The Environmental Management Technology Development program is an aggressive national program of applied research, development, demonstration, testing, and evaluation for environmental cleanup, waste management, and related technologies. Our strategy is to identify and develop technologies that can clean up the nuclear weapons complex, and manage the wastes more quickly, more safely and at a lower cost. In many cases, developing new technologies presents the best hope for ensuring a real reduction in risk to the environment and improved worker and public safety, especially given the fiscal constraints of this nation. (The Technology Development budget follows in Table 6.)

TABLE 6

TECHNOLOGY DEVELOPMENT
Funding Summary
(Dollars in Thousands)

Subactivity	FY 1995	FY 1996
DEFENSE		
Treatment and Remediation Technology Systems	157,718	203,800
Innovative & Crosscutting Technology Program	80,229	80,200
Industry Programs	43,200	41,200
Technology Integration	9,789	17,040
Program Support	38,054	33,271
Program Direction	16,754	14,999
Education and Integrated Risk Management Initiative	38,752	0
Infrastructure Program	32,863	0
Total, Technology Development	417,359*	390,510

*This includes Education and Risk Management Initiatives and Infrastructure Programs. These programs have been transferred to other Environmental Management organizations for FY 1996. The base budget for FY 1995 is $336.5 million.

Selected Accomplishments in Technology Development

- The Expedited Site Characterization methodology saved \$3 million and 6 months in characterizing parts of the Pantex, Texas, site. It also provided a more comprehensive site analysis than would have been possible with baseline technologies.

- Five new applications of technologies developed saved over \$28 million and, in one case, decades of treatment. (See California example below.)

- Decisions have been signed with private industry for three remediation projects using new technologies: Minimum Additive Waste Stabilization (MAWS) at Fernald, Robotic Retrieval and Vitrification at Idaho, and MAWS at Savannah River. These applications will save over \$80 million over baseline technologies. In total, over \$115 million have been saved through the use of new or improved technologies.

In Tennessee:

- We demonstrated a Laser-Induced Fluorescence (LIF) sensor system for the detection of uranium at the now closed K-25 gaseous diffusion uranium enrichment plant at the Oak Ridge site. This real-time sensor is capable of detecting uranium on surfaces through laser excitation of the oxide. Uranium was detected on the surfaces of gaseous diffusion chambers inside the building of K-25 as well as on the rooftops and vent stacks. For decontamination and decommissioning activities, where alpha particle detectors are currently being used to screen for uranium, the LIF system offers the potential of reducing first-order screening time to less than 10 percent of current requirements.

In California:

- At Lawrence Livermore National Laboratory, we demonstrated the use of dynamic underground stripping, a system for thermal remediation of an underground gasoline spill. Underground imaging techniques were used to verify remediation efficiency and to detect the presence of free gasoline, if any. Over 30,280 liters of gasoline have been removed, at an estimated cost of \$65 per cubic meter, versus a typical pump and treat cost of about \$260 per cubic meter. The time for remediating with a pump-and-treat system is in terms of several decades, while the dynamic stripping is in terms of several months. The baseline technology, pump and treat, costs \$25 million and takes 30 years; dynamic stripping costs \$6 million and takes only 6 months -- saving \$19 million and decades. The University of California is seeking commercialization opportunities.

In South Carolina:

- At the Savannah River Site, we successfully demonstrated in-situ air stripping. This new technology, which involves injection of air through underground horizontal wells to strip groundwater and soils of volatile organic chemicals, will be transferred to the Environmental Restoration program and to private industry for use.

- Also at Savannah River, Fiber Optic Chemical sensors have been used to allow on-the-spot monitoring of chlorine in waste streams and groundwater. This allows real-time analysis rather than normal week-long laboratory analysis. Non-exclusive licenses for Trichloroethylene sensors have been issued with Purus and Burge Instrument Company.

In New Mexico:

- The Long Range Alpha Detector (LRAD) was implemented at the Los Alamos National Laboratory. This instrument measures alpha radiation in air molecules in real-time and on large surface areas. Preliminary costs estimates indicate that LRAD saves from $10 to $20 thousand per site surveyed compared to conventional technologies. Up to 30 sites can be monitored in a day without disturbing soil or generating waste. This technology was transferred from Los Alamos to TMA/Eberline via a Cooperative Research and Development Agreement (CRADA).
- The Magnetometer Towed Array (MTA) measures magnetic forces, allowing buried hazardous wastes -- particularly ferrous metals -- to be located. Up to 15 acres a day can be surveyed, more than 7 times the capability of conventional technologies. It also costs about $2000 per acre to use versus $3500 to $5000 with conventional methods. Sandia National Laboratory developed this technology, and transferred it to Geo-Centers, Inc.

Priorities and Challenges in Technology Development

Some major priorities and challenges for Technology Development include:

- **Treat and dispose of mixed wastes.** We are pursuing versatile treatment methods such as plasma, vitrification, molten metal and non-thermal techniques. These activities are being closely coordinated with the Waste Management program to meet Federal Facilities Compliance Act requirements.
- **Retrieve and process tank waste.** We are initiating full-scale demonstrations on technology systems to safely retrieve and efficiently process high-level tank waste for permanent disposal. Tank structural analysis and waste content analysis methods are being developed.
- **Remediate contaminated soils and groundwater.** We have initiated full-scale demonstrations on technology systems to characterize, contain, and remediate contaminated plumes in soils and groundwater. In-situ treatment of Dense Non-Aqueous Phase Liquids (DNAPLs) is one example.
- **Stabilize landfills.** Containment and in-situ treatment methods for buried waste are being developed. Also, retrieval, characterization and treatment of landfill waste is being pursued.

- **Recycle materials from decontamination and decommissioning of facilities.** We will conduct a full-scale demonstration for the development of facility decontamination and decommissioning technologies with emphasis on the recycling of materials.

- **Transfer technologies to private industry.** As part of the Secretary's emphasis on measuring results, we have committed to making a minimum of 24 technologies available for transfer to private industry and to Federal facilities. By successfully transferring these technologies, the nation can achieve a return on the investment in technology development.

This concludes the description of our specific program areas. In the next section, I will describe our program's strategic goals and highlight the progress we have made.

III. STRATEGIC GOALS: INITIATIVES AND PROGRESS

Over the past year, the Department has made significant progress in fulfilling its goals for improving the Environmental Management program. In 1993 I established six strategic goals to guide our efforts.

(1) Manage and eliminate the urgent risks and threats in our system;

(2) Provide a safe workplace that is free from fatalities and accidents, and that continuously reduces injuries and adverse health effects;

(3) Change the system so that it is under control managerially and financially;

(4) Become more outcome oriented and get more results on the ground in a timely fashion;

(5) Focus the technology development program on DOE's major environmental management issues while involving the best talent in the DOE and the national (public and private) science and engineering communities; and

(6) Develop strong partnerships between the Department and its stakeholders.

We are dedicated to meeting the strategic goals we have set for the Environmental Management program, despite fiscal constraints. In fact, focussing on these strategic goals and priorities is even more critical in the face of funding constraints. However, we must all do our jobs more efficiently and effectively to meet the increasing amount of work we face. I would like to highlight some of our recent achievements in these six areas.

REDUCING URGENT RISKS

Two of our most urgent safety concerns have been addressed. A unique mixing pump installed in the SY-101 high-level waste tank at Hanford has begun routine operation after previous experimental use. This pump has virtually eliminated the danger of an explosion in this tank. Also, the threat of fire from unstable inventories of plutonium has been greatly reduced at Rocky Flats since beginning stabilization processes there.

In addition to these high-priority risks, our spent nuclear fuel management program continues to improve the storage conditions of this highly radioactive material. Nearly 200 spent fuel elements were recently transferred to safer storage conditions at our Idaho site, and we continue to upgrade the facilities that store this highly radioactive material.

We are committed to continued risk reduction. The Department has hundreds of high-level waste tanks, and some continue to pose some risk of explosion. Though the installation of the mixing pump in our most troublesome tank has been successful, we must continue to mitigate risks in the other storage tanks. Also, we have only begun to stabilize the plutonium inventory at Rocky Flats that poses a fire hazard. Some 100 additional kilograms need to be stabilized to eliminate the risk of a plutonium fire. We are committed to seeing this project through as quickly as possible. Furthermore, the continued improvement of our spent nuclear fuel storage facilities is a priority. We have made progress in this area, but more needs to be done. We are determined to see that these materials are stored in a safe, secure manner to enhance worker and public safety as well as support the Nation's nonproliferation goals.

In addition to these successes, I would like to point out that the Department of Energy was the first agency to adopt the recently developed risk principles that were the culmination of months of effort led by the Office of Science the Technology Policy. We intend to continue to use these principles in setting priorities for the Environmental Management program. These principles will be used across the federal government, including in applying sound risk analysis procedures to regulatory decision-making. As a regulated agency, not a regulator, the Department modified these principles to apply more specifically to its programs and procedures, to accommodate our citizens' values, to address inter-generational issues, and to clarify the role of prevention programs and social and economic considerations in risk management.

PROTECTING WORKER'S HEALTH AND SAFETY

Far too often, worker protection and safety have taken a back seat in the Department's corporate culture. This is no longer the case. Our second strategic goal helps ensure that the people who carry out the heart of the work of our program are protected from the risks they may face. Through continuing vigilance and close cooperation with our contractors, last year the Department reduced the amount of work days lost due to injury by 12 percent.

We will continue to train thousands of workers through sponsorship of a Hazardous Waste Operations and Emergency Response (HAZWOPER) program in cooperation with the National Institute for Environmental Health Sciences. This training is essential for the safe conduct of operations within Departmental transportation, storage, and disposal facilities (TSDFs) and hazardous waste sites, and is required by the Occupational Safety and Health Administration for workers who enter and work in these areas.

GAINING FINANCIAL AND MANAGERIAL CONTROL

Contract Reform

The Department's contracting system fulfilled the nation's Cold War priorities of designing, building, and testing nuclear weapons secretly and quickly. When production was the primary mission, one large contractor was responsible for virtually all services at each site, and that contractor was protected from most financial risks by the terms of the contract.

While appropriate for Cold War production, these types of contracts are not the best way to reach the environmental quality objectives of the Department today. We will require contractors involved in environmental management activities to demonstrate sound business practices and assume greater financial responsibility for activities within their control.

Contract reform initiatives emphasize competition and the development of clear, objective performance criteria and measures. Performance-based incentives are focused on the accomplishment of the Department's strategic mission and reward contractors for fulfilling clear programmatic objectives. The Department has also begun to reallocate the financial and legal risks inherent in operating its sites in order to hold contractors more accountable.

Currently, nearly $30 billion worth of contracts are being renegotiated and recompeted. A recent example of how the Department is changing its contracting arrangements is the consolidation of contracts at the Idaho National Engineering Laboratory. This consolidation is projected to save over $500 million over the next five years. It is also notable in that the contractor assumes a greater and more appropriate share of the financial risk for inadequate performance.

This process is just getting underway, and will take time to complete. However, it is well worth the effort to create a contract regime that is better-suited to our mission and will save billions of dollars.

Improved Contract Management

Compared to other federal agencies, the Department of Energy has the highest ratio of contractors to federal employees. We cannot gain managerial control of this program until we have the personnel to help us do that. The Department has been working closely with the Congress and the Office of Management and Budget to allow for greater flexibility within the authorized budget to hire more federal workers to shift this ratio. New cost estimators and project managers have already been hired to improve the efficiency of projects and quickly identify cost needs and opportunities for savings. Overall, sixteen hundred new Federal employees, including project managers and cost estimators, have been authorized for the program since FY 1994 and 1200 will be hired by March 1995. These new managers will primarily be located at our field sites, rather than in Washington, D.C.

As I mentioned before, we must downsize our contractor workforce substantially to bring workforce structure and size in line with new missions and management arrangements. These contractor workforce reductions are also necessary for improved productivity and cost savings.

New Initiatives for Budget Allocation

There are opportunities to better manage our money and achieve savings. Given the uncertainty of annual budgets, and the varying scope of work the program is responsible for, flexibility in budget allocation is essential to meet our program goals.

As I mentioned earlier, a new approach to budget allocation is proposed for this year. In FY 1996, at the Rocky Flats site, we are proposing a pilot budget process that will allocate funds to the site as a whole, rather than be divided along Environmental Management programmatic lines (such as environmental restoration, waste management, etc.). This will allow site managers to more quickly and effectively direct funds to the most urgent risks they face and to be responsive to changing conditions or new information about risks at the sites rather than having to go through the cumbersome exercise of reprogramming funds currently done at headquarters. Additionally, the site manager will be better able to engage regulators and other stakeholders to develop priorities that make sense for the site. It also increases the accountability of site managers to National Program Managers, to Congress, and to the regulators.

This pilot program holds much promise to reinvent budget allocation and improve risk management. Though only a preliminary program this year, we plan to expand the concept to all of our major sites in FY 1997 if it proves successful.

DEMONSTRATING TANGIBLE RESULTS

The Environmental Management program is committed to showing tangible progress in all of its activities. Already I have highlighted the achievements of the program since its inception, at particular sites, and by program area. The progress we have made is significant, but the challenges we face continue to mount. Thus, we must continue to set goals for progress in order to guide our efforts and address priorities. Let me share with you some of our immediate plans for the coming year.

Some of the key outcomes of the Environmental Management program planned for FY 1996 include:

- Complete the stabilization of the current plutonium oxide inventories at Rocky Flats, eliminating the risk of a plutonium fire;
- Transfer over 500 additional spent fuel elements to safer storage conditions in Idaho and Washington, thus protecting workers and the public from these highly radioactive substances;
- Demonstrate 50 new or improved environmental cleanup and/or characterization technologies to help reduce costs and increase the effectiveness of our work;
- Complete 100 interim environmental restoration actions, 20 larger-scale cleanups, 12 interim decommissioning and decontamination actions, and complete 2 more Formerly Utilized Sites Remedial Action Program (FUSRAP) projects;
- Begin operation of the Defense Waste Processing Facility in South Carolina and the vitrification plant at West Valley, New York, to convert liquid high-level waste into stable glass logs; and
- Finalize the Waste Isolation Pilot Plant compliance application for EPA approval, an important milestone for the Department's transuranic waste repository program.

It is my sincere hope and intention that, given adequate resources for our program, I can report back to you next year, as I am this year, and tell you that all of these things, and more, have been achieved.

DEVELOPING MORE EFFECTIVE TECHNOLOGIES

Beginning in 1993, the Environmental Management program established the goal of "focusing" technology development efforts on our most critical needs to assist in the missions of environmental quality. Five "focus areas" were created in 1994 to guide this effort. This "focusing" has been achieved and we are now engaged in developing and implementing new technologies and methods of environmental characterization and remediation to get results. Considering initial analysis that points to the Environmental Management program requiring several decades -- or more -- to complete its work, the need for basic research is also clear.

The five focus areas, and some examples of progress, include the following:

- **Mixed waste characterization, treatment, and disposal.** Our Idaho National Engineering Laboratory leads the programs to address treatment, destruction, and disposal of mixed wastes. Two of these, vitrification of mixed waste sludge and the encapsulation of nitrate salt waste in polyethylene, have been demonstrated in pilot projects. These activities will be closely coordinated with the Office of Waste Management to meet Federal Facility Compliance Act requirements.

- **Radioactive tank waste remediation.** Led by our Richland, Washington office, this program addresses the urgent problems associated with the storage of hundreds of millions of gallons of high-level radioactive waste is a primary focus. Characterization, leak detection, retrieval and processing of the tank wastes for final disposition are key areas of this effort. By June of 1997, the goal is to demonstrate the ability to retrieve and treat liquid tank waste to comply with the Hanford Tri-Party Agreement.

- **Contaminant plume containment and remediation.** Over 600 billion gallons of ground water and 200 million cubic yards of soil are contaminated with radioactive and hazardous materials. Our Savannah River Site in South Carolina heads up this focus area. The goal of this focus area is to prevent further spread of contaminants and remediate the ground water and soil contamination.

- **Landfill stabilization.** Also coordinated by the Savannah River Site, this focus area is aimed at remediating landfills and contaminated soils associated with over 3 million cubic meters of radioactive and hazardous buried waste, and other types of landfilled waste.

- **Facility transitioning, decommissioning final disposition.** The Department is responsible for deactivating and dispositioning 1200 facilities across the nation. This inventory is projected to grow to about 5000. The Morgantown Environmental Technology Center in West Virginia leads in the development of methods to decontaminate structures at lower cost to the taxpayer.

For FY 1996, our Technology Development program plans to demonstrate 50 new or improved environmental technologies. Furthermore, 24 technologies will be transferred or made available for transfer to our operating programs, other federal facilities, and the private sector.

Last year, we announced a new approach to managing our environmental research and technology development activities. The goal of this new approach is to conduct a research and technology development program that involves the best talent in the Department and the national science communities to focus on developing environmental surveillance and remediation technologies to efficiently clean up our sites.

Key features of this new approach include teaming up with our Waste Management, Environmental Restoration, and Nuclear Materials and Facilities Stabilization programs to identify, develop and field test needed technologies for these programs; continuing to use a life-cycle approach to technology development; involving high-level management across the Department; focusing technology development activities on solutions to major environmental management problems; focusing all available resources in national laboratories more effectively; involving industry in developing and implementing solutions including both technology transfer into the Department and technology transfer from DOE to the private sector; strengthening basic research by involving academia and other research organizations to stimulate technological breakthroughs; enhancing mechanisms for regulator and stakeholder involvement; and applying business principles such as avoiding unnecessary costs, getting a return on investment, and quickly transferring technologies to the marketplace.

We are involved in a number of efforts to develop new technologies. First, of course, are the variety of efforts at the national laboratories. These institutions have some of the best technical talent and facilities in the world, and are now available for conversion from their previous defense missions. However, we will continue to seek the most cost-effective source of research and development rather than rely solely on an internal, Departmental system. Second, we are participating on a Federal Advisory Committee to

Develop On-Site Innovative Technologies (DOIT) with several western governors, senior representatives from the Department of Defense and Interior, the Environmental Protection Agency, and ex-officio members of the Western Governors Association and the Office of Management and Budget.

PUBLIC PARTICIPATION AND ACCOUNTABILITY

Fifty years of secrecy related to the conduct of our nuclear weapons operations has contributed not only to widespread environmental and safety problems, but also to a widespread distrust of the Department which has made the business of restoring, stabilizing, and cleaning up more difficult and more costly than it needs to be. Now, this has changed. Secretary O'Leary's openness initiative beginning in December 1993 recognized the severe credibility problems the Department faced and its negative impact on our ability to do our job. We have learned that building trust is essential to the success of the Environmental Management program -- for negotiating agreements, obtaining permits, and achieving public consensus. Following the Secretary's initiatives on openness and involving the public in our decision-making, I established the Office of Public Accountability in 1993. This office is responsible for ensuring that all Environmental Management offices conduct substantive, cooperative planning with all our stakeholders in the development and implementation of budgets and policies. This mechanism allows the people who live and work in and around our sites to understand what we are doing and why, and affords them the opportunity to engage in the process. Our personnel in the field are receiving training on public participation, and in a short time, this office has taken major strides to actively involve the public in meaningful ways:

- We are continuing with an aggressive schedule that follows the recommendations of the Keystone process to involve stakeholders in key decisions through site-specific advisory boards (SSABs) at our major sites. We currently have SSABs in place at Fernald, Hanford, Rocky Flats, Utah, Nevada, and the Savannah River Site. Three additional SSABs are in the final stages of forming.

- Through the State and Tribal Government Working Group (STGWG), the Department provides a forum for six tribes and 17 states to share their concerns with us and provide input to the various sites around the country.
- The Environmental Management Advisory Board (EMAB) involves representatives from labor, the U.S. Environmental Protection Agency, tribes, states, and citizen groups in a variety of issues facing the Environmental Management program. The EMAB was recently reconstituted, and now has 28 members.
- We are also committed, in accordance with Executive Order 12898 on environmental justice, to working with those individuals and groups around our sites who may consider themselves to be disenfranchised. For example, we are working to ensure that the Native American communities around our sites are responsibly included in all of our regulatory negotiations.

IV. CONCLUSION -- REMAINING CHALLENGES BEFORE US

The Department of Energy has undergone significant changes and faced difficult challenges over the past few years. Since the end of the Cold War, the Department's primary mission has changed from that of producing nuclear weapons to addressing the consequences of a half-century of nuclear weapons production, testing, and research. We are applying our technical and scientific expertise on other endeavors to expand our knowledge and support the national economy. The Secretary has led the momentous effort in making our Department more open to facilitate meaningful public awareness and participation in national policy decisions. These institutional and fundamental cultural changes within the Department cannot happen overnight. We believe that we are on the right track to restore the credibility and effectiveness of the Department.

The Environmental Management program has been integrally involved with these Departmental changes, and has, in fact, spearheaded some of them. In many respects, our program is a microcosm of the Department. Openness, focus on a new mission, new motivations, and accountability are characteristics that the Environmental Management program has attempted to develop, and will continue to nurture. Coupled with our strategic goals, the Environmental Management program is dedicated to meeting its responsibilities in reducing risks, creating a safe work environment, and protecting public safety.

Our proposed FY 1996 budget for the Environmental Management Program is a declining budget given an equal work scope but it will still allow us to fulfill legal and moral commitments while simultaneously streamlining our program. This streamlining, however, has limits beyond which further cuts in funding will trade off savings against safety. We are engaged in a daunting effort to redirect the national commitment from production of nuclear weapons for our national security strategy to resolving the resulting widespread environmental and safety problems at thousands of contaminated sites across the country. We have an obligation to do no less and we are dedicated to producing meaningful results.

Thank you.

WEDNESDAY, MARCH 15, 1995.

ATOMIC ENERGY DEFENSE ACTIVITIES

WITNESSES

DR. VICTOR H. REIS, ASSISTANT SECRETARY FOR DEFENSE PROGRAMS, DEPARTMENT OF ENERGY

DR. HAROLD SMITH, ASSISTANT TO THE SECRETARY OF DEFENSE FOR ATOMIC ENERGY, DEPARTMENT OF DEFENSE

KENNETH E. BAKER, ACTING DIRECTOR, OFFICE OF NONPROLIFERATION AND NATIONAL SECURITY, DEPARTMENT OF ENERGY

OPENING REMARKS

Mr. MYERS. The committee will come to order.

Pursuant to a previous decision, this session this morning is an executive session, classified. Accordingly, the committee has determined that all committee staff have proper clearances, proper to participate this morning.

Dr. Smith, Dr. Reis, Mr. Baker, do you also assure us that everyone here has proper clearances?

Dr. SMITH. We do swear and affirm.

Mr. MYERS. We won't make you swear. I guess there is no one else here to remind. We have some new Members we will have to remind at a proper time, that everything that is considered here has to be considered, unless told otherwise, as classified, so we will proceed under those conditions.

The committee is pleased to welcome each of you here this morning before this committee. Your prepared statements will become a part of the record. I always wondered why in a classified session we have a reporter if we can't tell anybody. But for the record, who sees it? I know, you have to blot out and all that, but in any event, your prepared statements will be in the record, and you may proceed as you care.

Dr. REIS. Mr. Chairman, my name is Victor H. Reis, and I am the Assistant Secretary for Defense Programs. With your permission, I will read a brief statement.

DEFENSE PROGRAMS OVERVIEW

Mr. Chairman, the Defense Programs President's budget request for fiscal year 1996 is $3.5 billion. This is an increase of 8 percent over the equivalent fiscal year 1995 appropriation. This is a large increase in a tough fiscal climate and it is the first request for an increase after four years of sharp decline, but the significance of this request is not in its change in funding, but in its change in programmatic direction.

WEAPONS REDUCTION

In the aftermath of the Cold War, the United States has reduced the number of nuclear weapons by 59 percent and plans to reduce the number by 79 percent in 2003. We have ceased the production of new weapons. For Defense Programs, this meant turning over most of the Department of Energy's production plants, Hanford, Rocky Flats, Idaho, K–25 at Oak Ridge, Mound, and Pinellas to our Environment Restoration and Waste Management office. This year we continue that process by transferring the Savannah River Site. Reducing the number of active warheads requires an aggressive dismantlement program, and we would continue dismantlements at the maximum safe rate in fiscal year 1996. These steps are one phase of the Defense Programs response to the ending of the Cold War. To go further, we must define the future role of nuclear weapons and the character of the nuclear weapons stockpile.

NUCLEAR DETERRENCE

This was done in the Department of Defense's Nuclear Posture Review, approved by President Clinton. It affirms that continued maintenance of safe and reliable nuclear deterrent remains a cornerstone of U.S. national security policy. The President further directed the Department of Energy to initiate a Stockpile Stewardship Program, whose objective is to maintain a high level of confidence in the safety, reliability, and performance of the U.S. nuclear weapons stockpile without nuclear testing and without new weapon production. Stockpile Stewardship was first codified by the Congress in the fiscal year 1994 Defense Authorization Act. These directives define the future product of Defense Programs and shape the new Post Cold War Program.

Defense Programs is charged to deliver a high confidence, affordable, reliable, safe, and secure enduring stockpile of sufficient size and scope to ensure deterrence, while simultaneously supporting U.S. arms control and nonproliferation policy.

Because the stockpile must endure, we require a production complex to replace the stockpile when needed, including limited life components and tritium and because the world is uncertain, we need the ability to reconstitute, test and production.

By directing that the stockpile remains safe and reliable without testing, President Clinton envisioned a future that includes dramatic advances in nuclear arms control while simultaneously retaining nuclear deterrence. The Nuclear Posture Review calls this lead plus hedge. This is an extraordinarily difficult and demanding task.

SCIENCE-BASED STOCKPILE STEWARDSHIP

To ensure weapons confidence, we must replace empiricism with deeper scientific understanding of weapons and weapons physics. Because we must plan on weapons lasting well beyond their design life, we must measure and understand weapons aging processes sufficiently to predict and fix problems—before they lower stockpile confidence. We must develop new production techniques to reduce the cost of maintaining and rebuilding weapons, and we must maintain our ability to test in a meaningful way, if we are to avoid testing. All this represents a world class challenge.

To meet this challenge, we are requesting the start of a new program, Science-Based Stockpile Stewardship, and we would entrust its implementation to the three Defense Programs National Laboratories—Los Alamos, Livermore, and Sandia. These institutions are among the world's best scientific and engineering laboratories and have responded time and time again in problems of national imperative.

The fiscal year 1996 budget request begins this task. Some programs such as dismantlement and supplying limited life components for the active stockpile remain relatively unchanged. Other programs such as our Technology Transfer Program would be reoriented. But included within the fiscal year 1996 budget request are new programs that specifically respond to the President's challenge.

NEW INITIATIVES

The first is the National Ignition Facility. When completed, the National Ignition Facility will be the largest laser installation. It would create conditions normally found only inside suns and nuclear explosions. In fiscal year 1996, we would begin to apply neutron radiography to diagnose weapons materials aging using the Los Alamos Neutron Scattering Center, one of the world's finest such facilities, and we would begin to develop new computational capability. We require a much greater computational power if we are to have the integrated understanding that has heretofore been available only from underground testing.

Also, within the fiscal year 1996 budget is a request for funds for a new source of tritium. The United States has not produced tritium since 1988 and has relied upon the surplus from dismantled weapons to keep the necessary active weapons supplied. The use of surplus tritium will only last until around 2011, so it is essential that we begin the development of a new tritium source now.

SUMMARY

Mr. Chairman, these represent some of the highlights of the fiscal year 1996 Defense Programs budget request. It is a different budget than any of its predecessors, but these are different times. It responds directly to the requirements laid out for the Department of Energy by the Nuclear Posture Review, specifically recognizing the underlying need for nuclear strength as essential to reducing the nuclear danger. I am looking forward to working with the committee, Mr. Chairman, and am prepared to answer any questions that you might have.

[The prepared statement of Dr. Reis appears at the end of the hearing record.]

Mr. MYERS. Thank you, Dr. Reis.

Dr. Smith, are you next in the firing order here?

DEPARTMENT OF DEFENSE ASSESSMENT OF THE STOCKPILE

Dr. SMITH. I think I am. I have submitted my written testimony for the record, Mr. Chairman, and I am most pleased to be here to give you the Department of Defense's point of view regarding the shared responsibility that we have with them to maintain a stockpile such as Dr. Reis described.

I think it is useful to note that while these may not be the times that try men's souls, these are, indeed, difficult times with regard to the world of nuclear weapons. In a few short months, the stockpile will be the oldest on record, and, of course, it is aging and getting older every day.

Dr. Reis has already commented on the fact that there have been four years of declining budgets in the Defense Programs, which means that the infrastructure is now much smaller than it was, which means that DOE will have continuing difficulties in attracting the best and brightest of the young scientists and engineers to look after an aging, reducing stockpile.

It is well known that there will be no testing of these aging weapons for the foreseeable future, and yet at the same time we must maintain the same exacting conditions on reliability, safety, and security. This is, indeed, a challenge. In giving the Department of Defense's point of view, I would like to use the metaphor of a customer and a supplier.

The Department of Defense is the customer, the Department of Energy is the supplier.

Mr. MYERS. You read Galvin, didn't you?

Dr. SMITH. I certainly did. The requirements that we have for our supplier are quite clearly specified in the Nuclear Posture Review. They are conveyed to the supplier in a timely and precise and agreed-upon manner by the Nuclear Weapons Stockpile Memorandum which both Secretaries sign and is then forwarded to the President.

The efforts by the Department of Energy to meet the requirements set forth and submitted are overseen by the Nuclear Weapons Council and the commodity itself; that is, the weapons are accepted by the DOD under conditions, which I will describe as robust peer review. I would like to turn to each of these items now for a brief explanation.

REDUCTION IN NUCLEAR WEAPONS

Dr. Reis has already noted that the Nuclear Posture Review fulfills Secretary Perry's position of leading and hedging. That is, we are dismantling our weapons in as rapid a rate as is prudent, at the same time retaining the ability to return to higher levels if there is a change in the world order.

[Deleted].

[Deleted]. Let me give an example of how we are leading, though, in the reduction of our nuclear weapons.

Our ground combat troops, according to the NPR, do not have any nuclear weapons, and, indeed, they do not.

[Deleted].

The number of storage facilities for the active stockpile is down by three-quarters. The personnel who look after those weapons are down by a commensurate amount. We are indeed leading in the reduction of nuclear arsenals. We are hedging by requiring of our customer stockpile surveillance, engineering base lines.

By requiring that the DOE has the ability to refabricate weapons as they age and must be replaced, we require that they retain the capability to design new weapons. I want to emphasize that we require only the capability to design new weapons. We, the Department of Defense, are not asking for new weapon designs, only for the capability to do so.

We require a scientific and technological base, and we require that the DOE maintain a strategic reserve of special nuclear material—plutonium, highly enriched uranium and, of course, tritium. The NPR was a thorough effort, unique within the past decade, and I think does a fine job of quantifying what the Department of Defense thinks it needs. The Nuclear Weapons Stockpile Memorandum, sometimes called the NWSM, is a clear statement by number, and type of the weapons that we would like for the next six years and with less precision for the years that follow.

NUCLEAR WEAPONS COUNCIL

The Nuclear Weapons Council has been revitalized in this administration. It is chaired not by the Under Secretary, but, in fact, by the Deputy Secretary, John Deutch. Membership is limited. The Under Secretary of Energy, Charles Curtis, serves for the DOE, the Vice Chairman of the Joint Chiefs of Staff, Admiral Owens, serves for the military side. I serve as the Executive Secretary.

The Council meets about monthly and has not hesitated to delve into contentious issues, tritium production being one such example. I think it is an effective oversight mechanism between the two departments to keep a sharp eye on what is going on and to raise new issues as they become important to the Joint Chiefs, to the Department of Energy or to the Office of Secretary of Defense.

NUCLEAR TESTING

Finally, I want to come to the question of how does the Department of Defense decide that, indeed, the nuclear weapon is what we need. Before we entered the moratorium on testing, we, of course, would have the benefit of a nuclear test, something that is very hard to argue with.

The weapon produces the correct yield. The Department of Defense would, of course, accept it as a certified reliable weapon. We do not have that luxury today so we have asked the Department of Energy to provide robust, independent peer review which, of course, will produce two voluminous reports on every one of the weapons in the active stockpile.

We no longer have the benefit of simply listening to a weapon go bang. We, in fact, have to be smart enough to understand the sometimes contentious issues that science and engineers will put forward as they review the aging stockpile weapon types. Therefore we have a responsibility to educate ourselves, and we are accepting that with alacrity, but we do request from the DOE robust, independent peer review.

Mr. Chairman, in the future, the combination stockpile stewardship, aggressive stockpile surveillance, a robust program independent peer review will provide, to my mind, the best means to offset the loss of nuclear testing. However, without testing there will be inevitable erosion in our understanding and therefore in our confidence in that stockpile, maintaining sufficient confidence therefore is the challenge of the new environment.

I believe we are on the right track as we address this critical issue. Mr. Chairman, I can report today that the stockpile is safe, secure, and reliable, that it meets the requirements of the Department of Defense, and that the proposed budget for 1996 for the defense Programs in the Department of Energy provides sufficient funding to meet our responsibilities. Sir, that concludes my statement. I would be pleased to take your questions at any time.

[The prepared statement of Dr. Smith appears at the end of the hearing record.]

Mr. MYERS. Thank you. Mr. Baker, do you have some testimony this morning? We will get to the questions then, I am sure.

OPENING REMARKS

Mr. BAKER. Good morning, Mr. Chairman and members of the subcommittee. It is a pleasure to address you today as the Acting Director of the Nonproliferation and National Security at Department of Energy. With your permission, I would like to read a short statement and submit a longer one for the record.

Mr. MYERS. You may proceed.

Mr. BAKER. Our activities focus on three areas—reducing the global nuclear danger, providing effective, cost-efficient safeguards and security of the departmental complex, and improving the Department's emergency response capability. Nuclear nonproliferation has become one of the highest national security priorities, and the Department of Energy is leading the way in providing technical and analytical support to the United States, and international nonproliferation efforts.

We perform aggressive research and development activities in support of national and international nonproliferation concerns, specifically proliferation detection technology and treaty verification. We provide timely and customized intelligence to define this serious national security problem for the United States.

FISSILE MATERIAL PROTECTION, CONTROL, AND ACCOUNTING

Over the past year, we have made significant accomplishments in reducing the global nuclear danger. Our programs of cooperation between DOE Laboratories and nuclear research facilities in Russia to improve protection, control, and accounting of nuclear weapons material is yielding dramatic results.

At Kurchatov Institute on the outskirts of Moscow, the United States and Russia jointly collaborated to secure weapons-grade nuclear materials. The pace of this improvement was extraordinary. Work was completed in three months. The cost was modest, just shy of $1 million. I would like to show you, sir, what we went into last fall at Kurchatov.

On your left is a picture of what Kurchatov looked like last September. You can see woods were built up, and inside there was no fence. When we went inside the facility, there was no access control, there was no radiation detection systems, and there was a guard that was half asleep.

When we walked inside the facility, there were footlockers like you see in college locker rooms with a padlock like a bicycle lock. We opened it up, and we found enough uranium to make three nuclear weapons. We took action. To the right you can see we installed a fence. To the picture on your right we put in a computer system. We put in an access control system. We put in cameras. We put in the radiation detection system.

The work like this, sir, is what we want to continue throughout the next few years to make sure that Russian materials are protected at their source. The program will expand in the coming year with a promise of securing tons of weapons-usable material, not just kilogram quantities.

OTHER ACCOMPLISHMENTS

Last November, we successfully transferred approximately 600 kilograms of highly enriched uranium from Kazakhstan to the Department's Oak Ridge facility in Tennessee for safe and secure interim storage. By gaining ownership of this material, the United States has effectively removed it from potential acquisition by those who can develop weapons of mass destruction.

We have developed and deployed space-based sensors capable of detecting atmospheric and near-earth nuclear explosions. These sensors, on Defense Department satellites, provide a system for the United States to continuously monitor and detect nuclear explosions worldwide. During 1994, we were assigned the responsibility at the U.S. Government's primary agency for research and development of technology supporting U.S. requirements to monitor a future comprehensive test ban treaty.

We also provide technical expertise and policy recommendations in support of diplomatic efforts to achieve an indefinite extension of the Nonproliferation Treaty, a cornerstone of U.S. national security policy.

REQUESTED INCREASE

In addition to these accomplishments, there is still much more to do. Our requested increase of $86 million over fiscal year 1995 will allow us to accelerate these essential nonproliferation efforts and reduce the global nuclear danger. The Department will expand its efforts to end the civilian production and use of weapons-usable fissile materials. We will continue our efforts to monitor U.S. and Russian inventories of plutonium and highly enriched uranium from weapons dismantled with a goal of ensuring that dismantlement is irreversible.

Among other measures, we will advance nonproliferation by our efforts in North Korea, by supporting negotiations of a comprehensive test ban treaty and an international fissile material cut-off convention, and by facilitating international atomic energy agencies the world over. Our unique experience in support of national and international nonproliferation policies is supplemented by our efforts to develop more effective cost-efficient safeguards and security of the DOE complex.

SAFEGUARDS AND SECURITY

Over the past year, we have reduced departmental-wide safeguards and security costs by 12 percent without degrading security. The costs have come down through consolidation of nuclear material at DOE sites, improved safeguards and security, elimination of redundancies, effective use of the state-of-the-art technology, and reducing the number of security clearances. We are also improving the trust held by the American people by spearheading the Department's openness initiative.

We have an active program to declassify information about the Department's activities, and we are enabling greater access to the Department and to its facilities. All these activities are done consistent with national security objectives.

I would like to emphasize again that any changes we have made in the Safeguards and Security Program have not degraded our security posture. We are learning to meet the security challenges of today with less and we are being successful in that endeavor.

Finally, the Office of Nonproliferation and National Security seeks to improve the Department's emergency response capability. Our primary responsibility is to provide quick response to the emergency situations concerning the Department of Energy. Over the last year the Department's ability to effectively respond to emergencies has been enhanced by improved training, procedures, and facilities at DOE sites.

RECAP

In summary, the fiscal year 1996 request if granted, will allow the Department of Energy to continue to reduce the global nuclear danger, provide efficient cost-effective safeguards and security while fostering public trust and provide effective emergency response under all conditions. I will be happy to address any of your questions. Thank you.

[The prepared statement of Mr. Baker appears at the end of the hearing record.]

GALVIN REPORT

Mr. MYERS. Well, thank you, Mr. Baker. I am sure each of us has a series of questions. Mr. Bevill will be back shortly. He had an unexpected visitation here he had to go meet. Even as important as your missions are, constituents are very important in this atmosphere we live in today.

First, my questions. I don't know which one of you will answer, I will just direct the questions and try to figure out which one of you want to answer it. The Galvin Report, for instance, recommended that we change the Livermore part of the mission, but it also raises a question of whether today we need and can afford three weapons labs. What is your judgment on that?

Dr. REIS. Let me take that one on. I think both my colleagues, I am sure, would be glad to pitch in on that one. I think Dr. Smith in particular.

I think it gets back to the problem of working without testing. We had a continual testing program, then I believe if we were testing and shrinking our complex, which we are going to do, then I think there would be a real question in terms of why you would need two complete or relatively complete laboratories, but in an era where we don't have testing, we have never been there before, we need all the help, frankly, we can get in terms of maintaining that confidence.

We have talked to our customer. Dr. Smith, I think, made the point, I think, very eloquently in terms of the importance of a vigorous peer review. It is more than just peer review. You have got to have the right kind of people there. They have got to be involved in the process. They have to have design experience. In the past they have to have worked with the tests in the past.

In addition, they have to be full partners in the Stockpile Stewardship Program to understand the aging processes that are taking place, to be involved in the type of above-ground experiments that we need to maintain that confidence.

Whatever question you or any of the committee members will ask, I will try to come back to this confidence issue over and over again, because I think it is basically the key to making that happen. I mean, if we didn't have three laboratories, I would be coming and asking you for those, because this whole idea of peer review and understanding what those weapons are, especially as they go beyond their design life, I think it is absolutely essential that we have the third laboratory.

I think the Galvin Panel, kind of missed that one, and I don't think in regard to the Galvin Panel, I think perhaps I was not convincing enough to them as perhaps I should have been in terms of getting them to understand just what the role of confidence is and necessity of having really the best and the brightest working out that problem in a nontesting atmosphere.

Mr. MYERS. Well, I don't think you have answered the question, though. What you have said is a defense of the necessity of having a weapons lab, but do we need and can we afford three? Is there a reason why two can't do what three are doing today?

Dr. REIS. Sure, there are three. You know, one laboratory is Sandia, which, of course, works on the nonnuclear aspects of the components, and that is extremely important that we have that laboratory because safety and the security and the arming and the fusing and all the aspects of that is their responsibility, but, of course, they can test the nonnuclear components, and we can continue to test those in the laboratory. The question that the Galvin Panel raised and that has been in the press is do we need two weapons design laboratories. They are the ones who are actually working on the bomb. That gets back to the point I was raising, which is can we do with just one, and it comes back, again, to this, in a nontesting atmosphere, we need that vigorous peer review. We need people competing to understand what is happening with those weapons.

Many of the weapons in the enduring stockpile, of course, were built and designed by members of Livermore and Los Alamos, so they are the ones that have the knowledge. They are the ones that have the understanding of the particular weapons that we are expecting to last for a long period of time, but it gets back, again, Mr. Chairman, I think, to this peer review question that we really need both of those institutions in a nontesting regime, and I think we want to move forward in a nontesting regime.

I think the President has said there is going to be a moratorium. I think the probability of that, of a comprehensive test ban is very high. That is our policy, and that is what we are moving forward with, but we have to back that up, if you will, to ensure the confidence of those weapons, and that really does require two laboratories. Whether 25 years from now that may be a different story, but the current position now, which I believe is very strong in terms of needing those two laboratories along with Sandia, you end up with three, which I hope that answers your question.

NATIONAL LABORATORIES

Mr. MYERS. Well, it does, but you are somewhat confusing me again. My understanding, maybe I am mistaken about this, is that the civilian labs have the peer review process for direction and for programs, but I thought the weapons labs had a competitive review, a competitive program, their program direction by competition rather than the peer review. You are saying peer review now in the weapons lab.

Dr. REIS. I guess we are using the word, "peer review", it is a competitive situation. What peer review means in the broadest sense is you have somebody outside the system working on it. They are competing or just from a professional perspective giving their best shot at understanding what it was, it means that you just didn't depend on one group to sort of deal with that. It is peer review in the sense that I am bringing people from the outside. In other words, one laboratory is always looking at the other, but it is also a competitive form of peer review.

Mr. MYERS. Why do we treat them different? Why aren't both the civilian labs as well as the weapons lab treated the same as far as this is concerned?

Dr. REIS. I think it has to do, frankly, with the importance of nuclear weapons, that this isn't just a scientific judgment about something that would go into the paper, would increase our, basically increase our knowledge, but this is something that is of national security concern, and, you know, it takes on a much broader significance from a national security perspective than it is just from continued scientific understanding.

If somebody makes a mistake in a scientific paper sooner or later that will get corrected. If somebody makes a mistake with respect to a nuclear weapon, you know, we can't turn—that means they won't go off. It won't be safe. It really is a very different class of issue. So while the word, "peer review," is used broadly, I think what we are talking about here is something——

Mr. MYERS. I guess so. I don't want to be argumentative, but it would seem like it would be the reverse. You couldn't make a mistake in the weapons, so you would want peer review rather than competitive decisions. You would want the best minds, regardless of what it costs to get the job done.

Dr. REIS. Maybe I haven't been articulate enough explaining that.

Mr. MYERS. Maybe I am dense.

Dr. REIS. Maybe you have said it better than I have, Mr. Chairman. That is the case, we want the best minds sort of looking at that.

Harold, do you want to drop in on this perhaps?

Dr. SMITH. First of all, Mr. Chairman, you are not dense. I am convinced of that. This is a very complicated subject.

Mr. MYERS. The next election, would you mind coming out to Indiana and convincing people of that? I have a university, the faculty just doesn't understand why they should be relegated to have a clod like me to represent them. They don't hesitate to tell me once in a while. Maybe they are right.

Dr. SMITH. I was on the faculty of the University of California at Berkeley for many years. I understand the arrogance of the faculty very well.

GALVIN REPORT

Sir, I am going to take some of your points on first. First, the Galvin Report. There is much to commend the Galvin Report. I would like to make that very clear. I think they really did perform a useful service. I felt they paid particular attention to the briefings that I and my staff gave to them by noting that, "peer review in and of itself" is not sufficient reason for maintaining the second design laboratory, and I want to emphasize what Dr. Reis has said.

Sandia is apart. It is not the same as Livermore and Los Alamos, so there should be no question that we want, need at the Department of Defense. So the question is now the two design laboratories. I personally think the report was too pointed on that statement. What we need, what I think we need, is independent oversight by two different groups as to each weapon in the stockpile, should they be geographically apart? That is best. Is it essential? No. But that is the best way to do it.

The point I would like to make is that one would certainly not want to have a Livermore Laboratory that only provided peers, but that is a very vital, exciting laboratory that can do many, many things, and I think they ought to retain, in the opinion of DOD, they ought to retain the capability to be an equal peer in the review of nuclear weapons.

At the same time, there is much to be done. This is a world in which counterproliferation is a very serious question, and I cannot believe that artful management in DOE cannot find an array of tasks that are very important that do involve nuclear weapons, but they happen to be worrying about what will others do if they get their hands on our nuclear weapons or, as Mr. Baker has made eminently clear, what should we do if rogue states get Russian weapons?

These are very serious technical questions that Livermore and Los Alamos staffs are uniquely qualified, and I underline uniquely qualified to work on so that I don't think there is any dearth of challenging scientific tasks that the two laboratories should take on, and at the same time, in my own personal opinion, maintain sufficient nuclear weapon design competence to provide an adequate peer review of every weapon in the stockpile.

I think that Dr. Reis has really answered the question why are the weapons laboratories different than peer review in the scientific circles in which I moved as a member of the faculty. It is an arcane, small world. Unfortunately, getting smaller, so that the two laboratories are our only source of competent peer review of these products. One cannot go to the University of California at Berkeley and ask a very fine physicist to give his opinion on what happens when high explosive sits for 30 years in the presence of a radiation field from plutonium. You don't learn that in ordinary physics at Berkeley or MIT where I have experience. I hope I have added some clarity to the question, sir.

Mr. MYERS. I completely—I am not at all sure we can do it from a national ignition facility, either. That is the thing which you are speaking about, the stability of the weapons and the nuclear stockpile. This committee is quite concerned about them.

I apologize to my colleagues. I have taken more than 10 minutes. Mr. Bevill, you are recognized for 10 minutes.

PRESERVING KNOWLEDGE OF WEAPON DESIGNERS

Mr. BEVILL. We will forgive you, Mr. Chairman. I welcome each of you. It is good to see each of you again. Each of you always does a great job.

Dr. Reis, I was out at the Nevada Test Site recently and talking to the people out there, I met one that was really there when I think practically every one of the tests were made. I believe he participated in every one. And he was going to be retired in a few weeks, and named others there retiring, and so few of those people are left that actually participated in the real test. I asked him if with his experience and all, if there is any record of what he saw and how it worked and what happened and so on, and he said they hadn't talked to him. Someone did say, I later talked to someone else that said they were interviewing him and trying to get records of their experience. Getting something on record because that is knowledge that we are going to lose there that won't be available anymore perhaps in many years. So I thought I might ask you just what steps are you taking to preserve this, to preserve this knowledge for the future generations of weapon designers who will not have experienced actual underground testing of nuclear weapons?

Dr. REIS. We are starting, as you indicated, Congressman Bevill, a rather aggressive program in interviewing and trying to get on tape and on paper any way we can do this a program at all of the laboratories and at the test site.

What you pointed out is very true, there will only be like three—there will only have been about three people there who were actual test directors, and they are both—and all three of them are getting close to retirement age. Another perspective on that is not just to capture them, but to do the type of experiments on the Nevada Test Site that relate to a lot of the experience while they are still there to a lot of the experiences they have had. We have just completed such a test called KISMET. It was just a high energy explosive there were no nuclear—no nuclear yield or anything like that on that test. We still had the test directors involved in that. They brought on some of the people who would be the test directors if we needed information from the past about that process. This is the sort of thing that we are doing.

NEVADA TEST SITE

We are also bringing out, trying to do more diagnostics at the test site. I think the broader point you raise is that if we are going to, you know, move forward on this, we have to have the ability to respond to the Department of Defense and respond to the President that says you have to be able to resume testing within two years, and that means just not the ability to drill holes in the ground and maintain the infrastructure, but it also means a very active Nevada Test Site where the people from the laboratories come and actually work and participate in those type of tests while we still have those people who can relate to the problems that a test site has been in the past.

It is amazing when you have been out there and you think about it that sometimes at their height they were doing perhaps—in some cases over one test a week, and now we are not doing anything. Obviously we are not doing any testing at all, but it is all part of this, if I could go back to this how do you maintain confidence in your ability, so the Nevada Test Site is really a key, I believe, to maintaining that confidence over the future, so while it is the laboratories, and we have discussed that, I am sure we will be discussing that more, they have to have a place to not just stay in their laboratories, if you will, but get out and get involved on these broader issues, and testing is a big part of that.

Mr. BEVILL. Yes, I, in a helicopter, flew over those craters, and I was shocked at how many there are. I never realized that many tests had been made. But this gentleman hadn't even—they hadn't talked to him. They hadn't taken his statement. I don't recall his name, but he was one of a few. He said he is just one of a handful left. I asked him is anything being done about passing on your experience to others or making a record of it? Having you started that yet?

Dr. REIS. We certainly have, but I will get back on that quickly because I agree with you entirely, that it is absolutely essential that we get a record of their experience. I was there and Under Secretary Curtis was there last week and we spoke to those gentlemen. We spoke to Jim Magruder, we spoke to several of the people we were actively involved in that testing, and we talked just about that same subject.

Mr. BEVILL. I would think that would be very urgent.

Dr. REIS. It is, sir.

Mr. BEVILL. In a year you probably wouldn't have anybody that has conducted tests, that is possible.

Dr. REIS. That is possible. We will follow up on that very quickly.

Mr. BEVILL. I wish you would.

Dr. SMITH. Mr. Bevill, could I comment on the question?

Mr. BEVILL. Yes, Dr. Smith, I would be glad to hear from you.

Dr. SMITH. It is a very pertinent question, and the trend you see, we see it quite clearly.

[Deleted].

Mr. BEVILL. I hope you will do that. As a matter of fact, I am hoping the next time you are here that you can give us a report on what is being done because this concerns me a great deal. You know, this country can't afford to be the second best. We have the information there, and we ought to get it and it ought to be taught to these new directors. It ought to be in writing, and we ought to exploit it as much as possible.

Dr. SMITH. I agree, sir.

TRANSFER OF NUCLEAR WEAPONS PROGRAM TO DOD

Mr. BEVILL. Dr. Smith, would you care to comment on the proposals which have been mentioned that would transfer DOE's nuclear weapons program to the Department of Defense, and do you have any particular concerns with the suggestion?

Dr. SMITH. Sir, I hate to be so brief, but I represent my management and my——

Mr. BEVILL. That is all right. Sometimes I would like to hear some brief people.

Dr. SMITH. The leadership of the Pentagon is quite clear. We do not want to transfer that—the weapons production research, development, and engineering—to the management of the Department of Defense.

Mr. BEVILL. Well, that was brief. That is the most complete answer I have had this week.

Mr. Baker, what is the status of other countries' nuclear testing programs? Do you anticipate any countries performing nuclear tests in fiscal year 1995 or 1996, and do you expect China to test this year?

Mr. BAKER. The answer to that, Mr. Bevill, I would like——

Mr. BEVILL. Oh, I am sorry. I have got an urgent telephone call I have to take. Just go ahead.

Mr. FRELINGHUYSEN. Good morning, gentlemen.

Mr. BEVILL. You can answer mine on the record if I don't get back.

NAVIGATOR STUDY

Mr. FRELINGHUYSEN. As a new member of the committee, I would like to get a clear picture of what is called the Navigator Study. Is somebody prepared to tell me exactly what the purpose of that study is, when did it start, and what are its overall goals and objectives?

Dr. REIS. I think I can respond to that, Mr. Frelinghuysen. Several, about six or eight months ago, I got together with the members of, the sort of leading program managers both from the weapons perspective and the science perspective in each of the laboratories, who were responsible for carrying out the Stewardship Program, and I said, we really shouldn't be just thinking of ourselves as stewards, that it is really important for us to think about what the future brings.

We knew the Nuclear Posture Review was coming out and there was going to be perhaps some significant changes in where we are going in Defense Programs, in the whole nuclear weapons postures. What we really need is a different name. We need to think about the future as not just stewards, but we should be navigators.

Mr. FRELINGHUYSEN. So stewardship has been a historical mission, just for the record?

Dr. REIS. Well, stewardship has been a mission that has shown up really over the past few years which is, if you will, steward, you know—the weapons and the process, what a steward does. He keeps the current systems and everything safe in the cellar, if you will.

I felt while that it was extremely important we do that, that we really should start thinking further ahead, planning where Defense Programs is going, how we are to respond to the Post Cold War era, not just in terms of stewardship, if you will, but, again, navigating to the future. A group of two people from each of the laboratories meet about once a month. We work very closely with the Nuclear Weapons Council, and they are my, if you will, brain trust. What we have done really over the past—the Navigator Study, if you will, was a strategic plan that we put together in response to the Nuclear Posture Review.

We didn't wait until the Nuclear Posture Review was finished, but since we knew the direction it was going, we started over the summer and while we were working primarily with the leading members in each of the laboratories and in Defense Programs——

Mr. FRELINGHUYSEN. So just for the record, who specifically is involved in the navigator study?

Dr. REIS. The navigators would be the three laboratory directors and the three Defense Programs nuclear weapons program managers—that would be Roger Hagengruber at Sandia, John Immele at Los Alamos, and George Miller at Livermore. Also three people who are involved more with the scientific perspective in Defense Programs in each of those laboratories—Jerry Yonas at Sandia, Dick Fortner at Lawrence Livermore, and John Browne at Los Alamos—and of course, during the course of this study we supplemented that with a number of other people as well, including particularly people within the Defense Department.

Mr. FRELINGHUYSEN. But the actual objectives of the navigator, I understand the concept of stewardship, but was there more to the idea of the Navigator Study? Wasn't it driven also by costs?

Dr. REIS. What we tried to do was look ahead and say what is the world going to look like in the year 2010. We wanted to look beyond the current—beyond, you know, the day-to-day problems—but we didn't want to look so far ahead that, you know, it wouldn't affect what we were doing.

Mr. FRELINGHUYSEN. I have to vote. I am afraid the committee is recessing just for a few minutes and the Chair will be back. I apologize. Give me a chance to run out of here. Thank you.

[Recess.]

NEVADA TEST SITE

Mr. MYERS [presiding]. We apologize for the inconvenience, but we are doing our job. The committee will come to order.

Following up on, first, the nuclear testing site, the Nevada Test Site. There has been a suggestion of the possibility of establishing a solar panel. Is there an area out there that we could establish a solar farm, put these panels up to generate electricity for all those bright lights we see in Las Vegas?

Dr. REIS. I am not sure if it could handle all the bright lights in Las Vegas, but there certainly is plenty of space and plenty of sunlight and there is a good infrastructure in terms of roads and equipment, and so that, while that is not a responsibility, I would think that that certainly sounds reasonable to me.

Mr. MYERS. I think there would have to be some cooperation between your facility, your responsibility and your mission. What about that building that we built and by the time we got it built we didn't need it? What is it being used for now?

Dr. REIS. Are you referring to the Device Assembly Facility?

Mr. MYERS. Yes.

Dr. REIS. It is just about completed. We are looking very hard at using it. I would hope we would be using it in the future. We could use it for surveillance when we have to take weapons apart to look at them and try to understand the aging process. As we project out into the future, when one visualizes a complex which is smaller, one could use it as, indeed, the major place for assemblies and disassemblies.

It was designed to operate at the test site, but it could indeed work on the assembly and disassembly of the stockpile itself. Again, as we think about the future, perhaps 10 to 15 years from now, particularly when the major load of dismantlements are over, we will be continually dismantling and reassembling. So I agree with the point you are making is that we just don't want to build a facility like that. It was approximately $100 million. It is really state-of-the-art. It is a terrific, excellent, place to do things. It is way away from people, so I think we are looking very hard at actually utilizing that as soon as we can and using it aggressively in the future.

Mr. MYERS. Is any other nation in the world or anyone testing today?

Dr. REIS. I don't believe they are.

Ken, do you want to?

Mr. BAKER. Well, Mr. Bevill asked a question——

Dr. REIS. We didn't quite get to answer it.

Mr. MYERS. Okay.

NUCLEAR TESTING

Mr. BAKER. I will answer it, sir. The only one that is doing nuclear testing right now is China.

[Deleted.]

Mr. MYERS. Do they share the information they find from their testing with anyone else in the world, especially us?

Mr. BAKER. [Deleted.]

STOCKPILE STEWARDSHIP

Mr. MYERS. We are told that the National Ignition Facility, as well as the dual axis radiographic hydrodynamic test facility is important to replace the physical testing. Could you explain it so I could understand it and the committee could understand why and how that is going to replace actual testing out there?

Dr. REIS. It will not replace testing.

Mr. MYERS. Maybe I misunderstood it then.

Dr. REIS. I think people have used those expressions. I think it cannot replace testing directly, nothing that we have in the Stockpile Stewardship program can be a one-for-one replacement of the actual testing. I think, Harold, you would probably agree with me on that.

What it can do, though, is work on parts of the problem in terms of understanding what weapons do. It can help us diagnose what is happening in aging weapons. If there is a problem, it can help just like when you go to a doctor and have an X-ray. It doesn't cure you of that, but it helps the doctor understand, you know, what is the matter with you and helps him diagnose and make the next step in terms of fixing the problem. It also keeps the doctors, you know, working on real problems that are related to the situation that you have in mind.

It keeps the confidence in the whole system tuned up so if we ever do have to go back to testing you have people who are available to do that. It also keeps people involved directly enough in the nuclear weapons problems that they could raise their hand if there ever is a problem and say, look, we have to go back and do testing. They are available to do that. So you are really beginning to work on problems which are very similar. You are trying to simulate, as much as possible, the physics and understanding of these weapons, and you maintain that knowledge, you diagnose, you use it to diagnose problems that are showing up in the aging stockpile, and perhaps most important, you keep the scientists and engineers directly involved in this arcane science, if you will, of nuclear weapons because it really is very close to understanding the physics, chemistry, and the materials that relate to nuclear weapons. They are not a one-for-one replacement of the whole system.

Mr. MYERS. That is what I was afraid of. I am sorry I didn't get the answer I would like to have heard. This committee is very concerned about the decision not to test weapons. I think no question we should have reduced the number of tests. I think we were testing once a week out there. That probably was unnecessary, but it seems like we have reacted too far to the other side by no testing at all.

I am not going to ask you for your judgment because you have to support the administration, I realize, but I am troubled. At that building, and I can't remember the name of it out there, it is going to be used, then, for testing the deterioration of the nuclear warhead. As I understand, there won't be any actual explosion tests, but you are going to continue to monitor the stockpile; is that correct?

Dr. REIS. We are going to do more than just monitor the stockpile. It is not sufficient to just monitor what is happening. You also have to learn how to predict what problems there might be in the future. Our surveillance program is not just to look and say something may be happening here. I am not sure what it is. We have to do better than that in the future. We have to be able to predict what is going to happen and try to fix it before it happens without knowing that you are going to have this test, if you will, at the other end. So that is a tough, very difficult challenge, and that is indeed why, you know, we need the Stewardship Program.

TESTING

Mr. MYERS. I am not a scientist, as you already know from hearing me, but when I am just on my farm tractor, and I hear a knock, I can pretty much tell where the knock is coming from through experience. And I wonder about all the testing, all the dynamic equipment we may build, but unless you can get the characterization to be sure that what the characterization indicates is really true without testing, how are you ever really going to prove what you believe that you have found through the equipment process, a diagnostic process that you have now?

Dr. REIS. We have to not just listen to what that knock is, but we really have to go back and understand the science behind all that and we have to also work very closely with the people who have had the practical experience now and who have been in the process of testing and who do understand, who have been on the farm and understand what that knock really means, and we have to get that knowledge and work with them over the next 5 to 10 years and get them to understand, you know, so that the new people coming along will have that experience and understanding to do that. That is not an easy—I don't want to in any way underestimate the difficulty of that task.

Mr. MYERS. Did you say you only have three people left out there who were actually participating in a major way?

Dr. REIS. Who were the directors, who were the test directors.

Mr. MYERS. What is going to happen when they retire or all those people that you speak about have knowledge die off? My son-in-law, I tell him, the other day something would not work and I told him what the problem is, but until he digs in there and learns himself what it is, he is never going to believe what I told him, so how are you going to teach these future kids that come in here, the young people, all the talent they have if they have never put their hands on that weapon system, never been out there to see how it really reacts, without testing, how are they going to learn? The hard way, I am afraid.

Dr. REIS. We are going to have to develop a new way to do that. Many of the people we are dealing with now while they are getting older and they are retired, they are still very good people, and what we are putting together is a program at the laboratories, and we were discussing with Congressman Bevill when he left, and at the test site for people who can, one, make sure we have all that information available—archived and exercised properly.

Secondly, we are going to have to do a series of experiments, nonnuclear experiments at the test site itself that simulate as best one can, and we have actually completed one of these just in March. It was March 1st. It was called KISMET, where we went through almost the entire exercise just to keep the, if you will, the program moving. [Deleted.] Nevada will be a very important part of our Stockpile Stewardship Program. The experiments that we do there, so it is a different system, and you have expressed it very well, and it is going to be tough, but I think the Stewardship Program is a good start.

One more thing, if I could, to pick up on that, we have asked the Joint Advisory Committee of the Nuclear Weapons Council, which is an organization that reports back with Dr. Smith, to really take a hard look at specifically that question, and we have had General Larry Welch, who was former Chief of Staff of the Air Force, chairing that group and working with them to go right after that specific thing. Looking at the Nevada Test Site, how can you make the best use of the site in the future to go after the problems that you have described.

NEVADA TEST SITE

Mr. MYERS. Maybe I shouldn't have asked the question. Possibly our concern will be taken care of by an election. In other words, you don't think we ought to sell the Nevada Test Site then?

Dr. REIS. I would not sell the Nevada Test Site.

Mr. MYERS. I don't think it is about to be. Who would buy it?

Dr. SMITH. Just a very brief comment. I have referred to permitted experiments under the CTBT, which is in negotiation, in an answer to Mr. Bevill while you were away. Rather than go back over it, I would like to say that it is in the record, and it does in a sense ease the pain that you have properly raised from the Chair regarding the absence of testing. [Deleted.]

NUCLEAR WEAPONS STOCKPILE MEMORANDUM

Mr. MYERS. Because of our disjointed hearing this morning, having to go back and vote, if there is something you have already covered, don't hesitate to tell us you have already covered it. Before I yield to Mr. Frelinghuysen, one more question about the nuclear weapons stockpile memorandum.

We have seen that go down, down, down, and that also is a concern to some of us who are concerned about our national security, and the world situation that we find ourselves in today. However, it has been almost 40 years since I went to nuclear warfare school, CEP, is that what it was called?

Dr. SMITH. Yes.

Mr. MYERS. We always were concerned about those circles because of the accuracy of the weapon. What about our tonnage in the last 20 years, and the accuracy of the weapons, are we as capable today as we were 20 years ago when we had a lot more weapons?

Dr. SMITH. The answer is yes, sir, for the following reason; that while the megatonnage dropped over the 20 years that you described, the accuracy increased by a fiendish amount, and I won't go into the mathematics, but a slight increase in accuracy is more important than a slight increase in yield for very fundamental reasons so that the effectiveness of our nuclear stockpile during those 20 years clearly increased, no question about that.

The reason I hesitated slightly is, of course, now we are embarked on a true retirement and dismantlement program with the same weapons, so now there is a decline in the effective megatonnage is the jargon that we use in our stockpile. I am very comfortable with that, and I speak for the Department. Of course, it follows directly from the end of the Cold War, but as I said in my opening statement, we are following Secretary Perry's guidance that while we will dismantle according to our public statements aimed at START I and planning to go all the way to the START II implied limits, we, the Department of Defense, will insist that we retain both in our Department and under Dr. Reis, the ability to return at least to the number of weapons in the active stockpile, which would be consistent with the START I limits. You might ask should we have the ability to go higher than that. We are not planning to do so, not that that isn't a debatable question, but our plan is to simply have the capability to return to the START I limits at any time in the foreseeable future.

Mr. MYERS. Let's review the procedure briefly for Rod, who is a new member of this committee and a very active Member, a very concerned Member, but how frequently is the memorandum reviewed and how often, and how can it be changed and what review is there to the process? Is it the Nuclear Posture Review or is it the Council review?

Dr. SMITH. I will be happy to reply.

Mr. MYERS. Okay, would you?

Dr. SMITH. The Nuclear Weapons Stockpile Memorandum, Mr. Frelinghuysen, I do appreciate your interest in the subject. The Nuclear Weapons Stockpile Memorandum is jointly arrived at and is primarily overseen by people on my joint staff, that is the NWSM staff. It is concurred in at the one star level by all the services, plus important commands.

For instance, the standing committee includes representations from STRATCOM, from policy, from so-called SP, the Special Projects Office of the Navy. It has representation from Dr. Reis' staff and other staffs of DOE. It is this committee that approves the actual numbers that go into the stockpile memorandum.

This year in particular we made sure that those numbers which look out six and then more years in a less precise way is fully consistent with the NPR, so the NPR is a Department of Defense document that states our requirements, and the NWSM is a jointly developed careful memorandum that is very precise that is consistent with the NPR. That is then brought by me as the Executive Secretary to the Nuclear Weapons Council, Deutch, Dr. Deutch, the Deputy Secretary; Admiral Owens, the Vice Chairman of the Joint Chiefs of Staff; and Secretary Curtis, Under Secretary Curtis, Vic's superior in the Department of Energy. Those three and only those three, which makes it a hard-hitting decisive group, make the decision that the stockpile memorandum is satisfactory.

If it is, and it has proven to be, although not always without work, the Council itself is very thorough. It then goes to the Secretary of Defense and the Secretary of Energy for signature. Once signed off by both those Secretaries, it then goes to the President for approval.

It strikes me as a very sensible memorandum. I am pleased to have in the audience Lieutenant Colonel Baer, who is sitting to my right. Colonel Baer is truly an authority on how that memorandum goes together, and we would be happy to provide further information for the record on any aspect of what I have just said.

[The information follows:]

PROCESS AND TIMELINE FOR THE NUCLEAR WEAPONS STOCKPILE MEMORANDUM

The Nuclear Weapons Stockpile Memorandum (NWSM) is a jointly developed, Department of Defense (DoD) and Department of Energy (DOE), annual document which provides the President the number and type of weapons maintained in the stockpile for a six year period. Following Presidential approval of the NWSM, a Presidential Decision Directive (PDD) is issued which directs support for the projected nuclear weapons stockpile.

The NWSM process begins with development of the nuclear weapons requirements by the Joint Staff in close coordination with the nuclear Commander In

Chiefs (CINC). The weapons requirements are relayed to the Assistant to the Secretary of Defense, Atomic Energy (ATSD(AE)) for inclusion into the draft NWSM for the next fiscal year (FY). A group of Nuclear Weapons Council (NWC) action officers, made up of representatives from the Services, Joint Staff, DOE, and Office of Secretary of Defense (OSD), meet to review and coordinate on the ATSD(AE) draft NWSM. Issues are resolved and a coordinated NWSM is prepared for NWC Standing and Safety Committee (NWCSSC) approval. The NWCSSC is a joint committee made up of flag rank personnel who approve the NWSM and forward it to the NWC for review and approval. The NWC, currently made up of the Deputy Secretary of Defense, the Vice Chairman of the Joint Chiefs of Staff, and the Under Secretary of Energy, provides a senior level review of the NWSM. The NWC forwards the NWSM to the Secretary of Defense and then the Secretary of Energy for signature. The NWSM is then forwarded to the President for review and final approval. This process typically takes a minimum of six months to complete.

The FY 1996–2001 NWSM development process has already begun within both departments. Initial assessments are being developed to determine if changes in the previous NWSM will be required. This dynamic process continues throughout the development phase and strives to incorporate the most current requirements and schedules. The FY 1995–2000 NWSM was delayed beyond its September 30, 1994 suspense to the President to ensure the Nuclear Posture Review (NPR) results were considered. The FY 1996–2001 NWSM will incorporate the nuclear CINCs detailed nuclear weapons requirements being developed as a result of the DoD's NPR Implementation Plan. The NWSM suspense to the President is stipulated in the PDD, and is typically September 30 each year.

Mr. MYERS. How frequently is it reviewed?

Dr. SMITH. Sorry, sir, it is an annual production.

Mr. MYERS. Is it done before you come to this committee? Is this a new figure now?

Dr. SMITH. Ordinarily, it would have been done. Right now it is done, but it is not fully signed off. The reason that it is late this year is that we wanted to make sure it was consistent with the NPR, which was delayed some, so that we held back on the formalities of the NWSM while we awaited the public release of the NPR. However, the actual numbers in there we have known for some time and they are available to you and your colleagues.

Mr. MYERS. Thank you.

Mr. Bevill.

NEW TRITIUM SOURCE

Mr. BEVILL. Thank you, Mr. Chairman. Dr. Reis, did you discuss the advantages and disadvantages of an accelerator or a reactor as the new tritium source?

Dr. REIS. I would be delighted to. As you know, over the past year, Mr. Bevill, we have been looking at what is the appropriate technology and where are the reasonable sites for a new tritium production source. We have looked at four different technologies, three different types of reactors and the accelerator, plus five different potential sites. We issued on March 1st a Draft Programmatic Environmental Impact Statement, and we expect to have a Record of Decision this November.

We are having public scoping meetings and all the things that you do for a Programmatic Environmental Impact Statement. The advantages to a reactor are, of course, that we have built reactors in the past. Although, tritium, in the past, was produced with a heavy water reactor. There is no, if you will, technology problems involved with the reactor.

Some people will also give as an advantage the fact that with some of the types of reactors that one would deal with, a light water reactor, you could also sell electricity. The disadvantages of a reactor, of course, are that you have a reactor. It has been a long time since we built a reactor in this country. As you know, there has been a lot of difficulty in regulation, in licensing and in public interface.

When you are finished with a reactor, you have to deal with a lot of fissile material, high level nuclear waste, and if you read in the papers these days, you know, the problem of what to do with high level nuclear waste is a very, very difficult one. One which we don't have an easy solution to, so there are also certain public concerns about the safety of nuclear reactors in the event of a catastrophe. These are the pluses and minuses of a reactor.

A major advantage in an accelerator is that you don't have those safety problems. You don't have them since you are not dealing with any fissile material at all we don't have the problem of dealing with high level or even low or medium level waste or anything like that. It is a much cleaner, it is a much simpler system.

The disadvantages—we have never actually generated a lot. Tritium has been generated from accelerators dating back sort of 20 years. There aren't any physics problems. We understand how to do that very well, but we have never actually built a production unit for an accelerator. If we choose an accelerator—if the fiscal year 1996 request is approved, what we would do with an accelerator is to start to reduce some of the production concerns. We would be moving ahead with something which would resemble, if you will, a small pilot program to demonstrate that we can on a production level produce tritium.

One would always have, of course, a back up to be able to go back and react. Perhaps I can show a chart that would describe in some way where this is. This is classified. This kind of shows the tritium situation where we are now as I mentioned in my testimony right now.

FY 1994–FY 2023

Tritium Inventory

CHART

[Deleted].

The green line is required inventory. That is the amount of tritium we need for the stockpile as the Department of Defense and indeed, sir, what the Nuclear Weapons Stockpile Memorandum (NWSM) tells us we have got to have for any one of those years and projecting out further. That includes all the weapons one would expect to have plus a five year backup, and what we want to be looking at, what you see there is two different types of systems, one with the advanced or the accelerator production of tritium and the other is the amount of tritium that would be produced from a light water reactor.

I think that captures, as you can see, that both of them are sufficient. Perhaps I could show one more, so both would clearly do, basically both would clearly do the job. The difference is, this happens to be a somewhat, this is basically a large volume, but what you can see is that in one case, depending upon which reactor, you get a fair amount of high level waste. That is fissile materials. That is the material that would have to eventually go to Yucca Mountain or somewhere with the reactor, and the accelerator production of tritium and that is, of course, zero.

The last item, of course, is with a reactor we could have an accident, and there are essentially no consequences with an accelerator production of tritium. It just stops, whereas, of course, you have to deal with a fair amount of fissile material if there is an accident. That is kind of it, Mr. Bevill.

I would be pleased to give you more detailed answers if you have any questions. The costs between the two are in terms of building the costs. Let me break it into two areas. The costs are, in terms of building a small light water reactor or a heavy water reactor or even a high temperature gas, approximately the same. You are talking $2 to $3 billion for building these.

The difference in net costs, that could then change because if you build a light water reactor, there would always be the possibility of selling the electricity, which you would not have with a heavy water reactor or an accelerator because that purpose is only to, of course, produce tritium.

In a sense, with the light water reactor, you would primarily be selling electricity. The tritium would be a by-product almost of what the operation kind of is. There is a good news and a bad news to that. The good news is you are selling electricity. The bad news is you are now mixing a military function and a civilian function, and "Who is in charge here? quote, you know, how do you sort of deal with that.

We have never really done that in the past. In our discussions with the Nuclear Regulatory Commission and the civilian community, they feel very uneasy about nuclear power. In our discussions with the Department of Defense, who is our customer, they say: "Well, look, please, you know, we don't want to have to be involved in dealing with a whole lot of additional civilian regulations, which is necessary for a reactor. Can you just please have the system that just gives me the tritium?" Dr. Smith is concerned from the customer perspective. What he tells me frequently, "Look, I don't care how you produce the tritium, but please don't make it into a scientific experiment." The fewer people who have to be involved with the system, the more assured he is of getting his tritium. With your selling electricity, which sounds like a reasonable thing to do, you could sell electricity but I have to respond to the NWSM, and the Nuclear Posture Review. They were very clear, and I support that entirely.

My job is to produce, the Department of Energy's job is to produce—not my job, the Department of Energy Defense Programs—an assured quantity of tritium in time to support that system, and certainly we want to use the least costly way of doing that. The most important thing is the assurance of a new source of tritium. Every additional complication that one adds to this makes them probably a little more nervous about getting the assurance.

Remember, we are dealing with a background now where we haven't produced any since 1988, and there is a history of not being able to perform, if you will, in terms of that system, so we are under a lot of pressure and I think correctly so, Mr. Chairman and Mr. Bevill, to respond so that we give the highest level assurance that we will be able to deliver that tritium.

Dr. SMITH. Mr. Bevill, a brief comment.

Mr. BEVILL. Yes, I believe my time is up. Yes, go right ahead, sir.

Dr. SMITH. From the point of view of the customer, the Nuclear Weapons Council has approved tritium production by accelerator and we have looked at the Risk Reduction Program. We do add one further sensible customer requirement; namely, that the Department of Energy has to be ready with a hedge, an altogether different technology just in case the accelerator program gets into trouble for fiscal, political or technical reasons, and therefore some form of reactor-produced tritium at the ready is essential, and we have made that point quite clearly.

Mr. BEVILL. Do I understand you to mean that you don't have this reactor now? Don't we have that?

Dr. SMITH. We do not. We do not.

Mr. BEVILL. We do not?

Dr. SMITH. The type of hedges that we would like the Department of Energy to think about are such things as developing targets, so-called targets now which, if needed, could be inserted in ordinary operating reactors today.

Speaking personally, sir, that strikes me as the most sensible of the hedges.

Mr. MYERS. If you would yield.

Mr. BEVILL. Yes.

Mr. MYERS. The K-reactor produced tritium. It is in cold storage now. It would take a little while to get it going again but if the fall-back position, we still have the K-reactor we could operate for a short time, couldn't we? You said no reactor, but don't we have the K-reactor still capable of producing tritium?

Dr. SMITH. Your statement was true up until a few months ago. Then the decision was taken to allow the K-reactor to have a graceful death. The K-reactor is now becoming no longer an option. One could debate whether it was really an option over these past many months, but I can say with assurety that it is not, by decision it is not an option today. The decision was taken by DOE, so I really should refer to Dr. Reis.

Dr. REIS. If I could comment on that, we, of course, looked at, you know, just what kind of a backup one would require. We looked very hard at the K-reactor, obviously, for producing, if you will, some amounts of tritium that we would need. Perhaps we could put the chart back on which shows what the situation is right now. I think that would basically put it in context.

The K-reactor would take, we believe, to get it back into, to where it could produce some form of enough to make a difference would be three or four years at a price of approximately $1.5 billion to get it back to the point where it could operate as a backup and produce tritium to make any difference.

If you look at the chart and look where we are, back in fiscal year 1995, three or four years, at $1.5 billion we think we could do better. I agree entirely with Dr. Smith when he says as a backup what we really would be concerned with is can I have targets that I could put into a commercial reactor so if there is a national emergency I don't have to worry about the difference between civilian reactors and military reactors or even other government reactors. It sort of goes away in those sorts of situations. I would need a backup.

What we are talking about is what we feel pretty comfortable where we are right now [deleted]. The situation is not backups right now. It is backups, fundamentally, later in time, which you will see when we make the Record of Decision. All of these will essentially be folded into the Record of Decision this November.

Mr. MYERS. I am concerned about the demise of the K-reactor. To my knowledge, this is the first I have heard of it. I thought it was still on stand by, it could be brought back.

Dr. REIS. I am sorry we didn't get this information to you.

Mr. MYERS. Because this committee has always held that that should be held, and I would think we would be told about it. It concerns me.

Dr. REIS. I certainly apologize for not getting that information to you.

Mr. MYERS. Don't apologize.

Dr. REIS. Well, okay.

Mr. MYERS. Mr. Frelinghuysen.

NAVIGATOR STUDY

Mr. FRELINGHYSEN. Thank you, Mr. Chairman. When you went out for a vote earlier I had started some questions relative to the study of the stockpile report function known as the navigator study. I am not quite clear, Dr. Reis, exactly what the goals and objectives of that study are.

Dr. REIS. The goals and the objectives of that study were to see how we could effectively respond to the Nuclear Posture Review. We did start that study prior to the completion of the Nuclear Posture Review, and what we said, look, to again look out into the future, what would the world be like when our dismantlements are finished. When the things we are working on right now on a day-to-day basis are fundamentally completed. How can we respond to the Nuclear Posture Review, and what we said was, look, we are going to need a nuclear—nuclear weapons are still going to be very important. They are still going to be the basis of deterrence. The numbers we will be dealing with will be somewhere about, you know, maybe between the [deleted] nuclear weapons. We will be living in a no-underground-testing environment, but we are going to have to do some serious replacement of some of the weapons, some of our aging weapons, and we have to have an ability to reconstitute both in terms of production and tests, and we, if you will, use that as our background, as a background system.

Mr. FRELINGHUYSEN. I thought that the Navigator Study did have some sort of a specific cost reduction goal.

Dr. REIS. Oh, sorry. And then, again, we said, look, we also have to do this in an affordable manner, and we took as a cost reduction. We would like to operate for something less than $3 billion, perhaps between $2.5 and $3 billion. I appreciate your reminding me of that. That was very important because this whole system has to be affordable, and we got to that number by sort of saying historically about one-third of the price of our strategic forces have been in the weapons, about two-thirds in terms of operating, in terms of the systems that we had to deal with, and the submarines, the missiles themselves, the bombers, you know, what it would take to sort of do that. We felt that was a good goal to work for.

Mr. FRELINGHUYSEN. From what portion of the complex will these savings come from?

Dr. REIS. We feel that the only way to do this is to reduce the production complex significantly, and to, if you will, pull back to the laboratories, to the test site, and to as small a production complex as possible.

Mr. FRELINGHUYSEN. Where does the study stand now and is there an end in sight?

Dr. REIS. The study——

Mr. FRELINGHUYSEN. And who do you make your recommendations to?

Dr. REIS. Sure, the recommendation is obviously made directly to the Department. Much of what that study is, as you will see, is really covered in my written testimony. We didn't name it that way specifically. You won't see navigators mentioned. We have also called it the Defense Programs 2010 Study. We reviewed that formally with, of course, the Nuclear Weapons Council. We have reviewed it with the Under Secretary.

Are we moving in essentially the right direction? It was a what-if study. Can we get there from here to there, given that these are the broadest goals that came out of the Nuclear Posture Review, and we have added one goal which you reminded me was that we have to be affordable as well.

Mr. FRELINGHUYSEN. What conclusions have you reached to date? I understand the study, you know, there are several stages to the study. Have you reached some conclusions?

Dr. REIS. The conclusions that we have reached are the following, we really do need three laboratories, and the reason we need the three is to maintain the confidence. Of course, it gets back to the fact that we would assume no testing.

Mr. FRELINGHUYSEN. We have three laboratories now, so we have reached a conclusion that we continue to need three laboratories.

Dr. REIS. That is right. We reached the conclusion that we really do need the three laboratories, we have reached the conclusion that we really do need the Nevada test site for the reason if we are ever going to reconstitute, one, that is the only place that we can reconstitute in terms of a testing perspective.

The other conclusion we reached is that we have got to make better use of a lot of the facilities that we already have available. Chairman Myers mentioned the Device Assembly Facility. That just can't sit there. That has now got to become an active part of the assembly and disassembly of what we are doing in the future.

We have also suggested, however, that we really do have to change the way we are operating our production complex. Let me—perhaps I could show one more, show a chart to give you the reason why we think that is important. Frequently this is not discussed, but this is what we are facing in the future. These are the weapons in the enduring stockpile.

[Deleted].

We don't have the capacity to do that. Now we could retain that. We could recreate that capacity or we could put that back, but that involves a Rocky Flats, that involves many of the systems that were built in that. We just don't have the capacity to sort of deal with that. So what we said was, look, we need another way to do this. What we have to do is start rebuilding.

One is that we have to understand those weapons themselves. Do they need to be rebuilt? Do they need to be rebuilt in that category? This gets back to what Chairman Myers was saying earlier about understanding the aging process. You know, when you hear those knocks, what does that mean, and it isn't just fix it. Now we have to get the knock before it happens, if you will, and that is why our advanced surveillance, if you will, to understand these weapons, to understand the physics and chemistry of the weapons is so an integral part of our stewardship program. That is where the navigating, if you will, comes in.

We have to look to the future, not just think about what we did in the past, because we are facing that, we are basically facing that problem. Now, if we could have a system, and that has been one of the things we are recommending, that says let's start, let's not wait until 2010 and then throw up our hands if we could start rebuilding those systems and putting on some of the improvements that we know are there in terms of safety, in terms of reliability, in terms of understanding these and oh, by the way, doing that recognizing that we are not going to be able to test when we make those improvements, we can level that out, okay, and we can put together a smaller complex that does not work at the [deleted] but if you didn't just wait and then do a big chunk, if you started doing them at 100 or 200 a year, perhaps using the Device Assembly Facility, perhaps using some of the equipment, some of the more modern facilities that we have now, we can level that out, you know, and produce for the Department of Defense, you know, the right numbers at the right time. That is part of the Stewardship program. So it isn't just what do we do now that we don't have testing.

It is also to create a new production complex, and we are working very closely with the Department of Defense because they are facing very many of the same things when they are dealing with planes, with submarines, you know, what are the critical things that you need to maintain and how do you keep all those people sharp, because it isn't just the testers that were needing to be sharp. It is the production complex as well, and you have to be producing.

It is very hard to stay sharp in producing things if you are not actually making something. So it is another part of the Stewardship Program, which is so essential. That came out, sir, out of when we began to look at what were the problems in the year 2010. If you just look at the problem in the five-year plan, you know, at 2000 you don't see that showing up. You begin to look out a little bit further and all of a sudden that bump shows up and you can't just wait, okay, until the Nuclear Weapons Council at the year 2000 and say now what are you going to do about that? Now is the time to start dealing with that system.

Mr. FRELINGHUYSEN. I thank you for a rather lengthy response. I would like to put a number of questions in the record to follow up on what I have asked earlier.

Thank you, Mr. Chairman. Thank you, Doctor.

Dr. SMITH. Mr. Chairman, could I make a brief comment?

Mr. MYERS. Certainly.

Dr. SMITH. Mr. Frelinghuysen, two things were mentioned I wanted to clarify. To my knowledge, the Nuclear Weapons Council has not had a chance to review the 2010 study that Dr. Reis referred to. It is not that we are unaware of it, but we have not formally done so. I don't want to leave this committee with the sense that the 2010 study has been reviewed and approved by the Council. It has not.

Mr. FRELINGHUYSEN. Just so I understand, the 2010 study is one and the same as the navigator study?

Dr. REIS. Yes, sir.

Dr. SMITH. Secondly, this idea of beginning production now is a very essential concept in the mind of the Department of Defense. The Nuclear Weapons Council has looked at that issue very carefully, and reviewed a particular budget to ensure that that production capability was there. That budget would require Dr. Reis to manage something like $4 billion a year. The present budget is not up to that standard.

Now, it is the President's budget, and I, of course, as a member of the administration will have to defend it, but I think I am also obligated to point out to you that the Nuclear Weapons Council decided that approximately $4 billion a year was necessary if we are to begin the kind of low rate production that Dr. Reis has very correctly said is necessary to avoid the bimodal graph he just put up, early production, early demonstration of an ability to produce new weapons of old design is a very essential part to maintaining the stockpile from the standpoint of the Department of Defense.

Mr. FRELINGHUYSEN. Thank you.

Mr. MYERS. Thank you, Rod.

Mr. Riggs.

Mr. RIGGS. Mr. Chairman, good morning still to the witnesses. We are such a small and intimate gathering I forget to use the microphone. I am constantly and continually amazed at the diversity of this job, going from timber salvage to atomic energy security in one morning. I hope I can make that mental transition.

THE ACCELERATOR VERSUS A REACTOR

The first question I would like to ask coming in on the very tail end of the discussion is to Dr. Smith, and that is does DOD have a preference between an accelerator or a reactor as a new source of tritium production?

Dr. SMITH. No, sir.

Dr. Reis said, and I was going to applaud, we want the tritium. We don't really care how you produce it. That is an overstatement clearly, but we are satisfied with the accelerator production technique as a means to provide the amount of tritium we need when we need it. I think you were here when I said we also want to have a hedge at the ready just in case the accelerator program gets into trouble for any reason whatsoever.

Mr. RIGGS. For what reason: In a hypothetical example, how could the accelerator program get in trouble?

Dr. SMITH. Well, for example, it is a very high current device. To my knowledge, we have never run linear accelerators with ionized particles at such high currents. We have never, to my knowledge, really developed the helium 3 target technology. Those two come to mind immediately. There are real technical challenges to that program.

My review, the review of my staff and the review of the Joint Advisory Committee under General Welch and the review by the Nuclear Weapons Council all suggest that these challenges can be met, but nonetheless they are challenges and therefore hedges are necessary.

Mr. RIGGS. Dr. Reis, do you have anything you want to add to that?

Dr. REIS. No, I think that is correct. I think you would want to hedge regardless of which you chose, even if we chose a reactor you would want to have a hedge. The concern I have and the concern Dr. Smith has is assured production, and it is important enough that we just don't bet entirely on kind of one, completely one horse.

I think the hedge that Dr. Smith suggested which is look, be prepared for a target that could go into a commercial reactor in the event anything happened. In the event of an earthquake, you know, or some sort of natural catastrophe on where you are doing is a good hedge in either event. I concur with Dr. Smith—completely with his comments.

DISMANTLING AND DISPOSAL OF WEAPONS

Mr. RIGGS. Now, this may be a little outside your bailiwick, but we, a couple weeks ago, had some discussion about the dismantling and disposal of weapons out of our nuclear weapons stockpile, particularly in light of the President's recent announcement of further reductions in the stockpile. I believe that there is some discussion and maybe even some controversy associated with the disposal aspect, if you will.

Dr. REIS. Yes.

Mr. RIGGS. Are you involved in that at all? Would that fall under the responsibilities of the stockpile stewardship program at all?

Dr. REIS. Our program, sir, is to do the dismantlement, and we do the interim storage. The final, what happens with the disposal is the responsibility of the Materials Disposition Office, I believe that is with——

Mr. BAKER. They will be here this afternoon.

Dr. REIS. They are giving a hearing this afternoon.

Mr. RIGGS. Well, all the better to get your views now.

Dr. REIS. It is a tough problem. It is really a very, very difficult problem. There was a very good article, I thought, in yesterday's New York Times that described that the easy technical solutions turn out to be very difficult political solutions and the very difficult—and the relatively easy political solutions turn out to be difficult techncial—and I think that captures it, that captures it very, very well.

It is one of the more complex technical and political problems, I think, this Nation is facing, and there is just no easy way out of that. I should just perhaps mention that the National Academy study said what we should do with the weapons-grade material is move it to the civilian standard, but, of course, we have not solved what to do with the civilian situation as yet, and, of course, it gets more complicated and perhaps, Ken, you could run on this is, this isn't just a U.S. problem. This is really a world problem, and it is one where we are very concerned with what is happening in the former Soviet Union as well.

Mr. RIGGS. Well, absolutely, and I think that is a very important nexus to pursue, but, first, let me ask you, isn't there a considerable difference of opinion within the scientific community, and even within the Department of Energy regarding the whole issue of long-term disposal?

I mean, isn't that the thrust of what The New York Times articles have highlighted because they did an earlier article dating back——

Dr. REIS. Yes, I think what you are referring to is the concern, would there be explosions in Yucca Mountain?

Mr. RIGGS. Geological concerns.

Dr. REIS. I think the very strong weight of opinion within the Department and certainly even within Los Alamos is the particular concern is, you know, very, very low probability, really approaching zero, and I would be delighted to follow up or provide you the documentation in that regard.

[The information follows:]

YUCCA MOUNTAIN

The publication in the newspapers of the Bowman/Venneri theories gets ahead of an established scientific review process by reporting on a scientific paper before a formal and rigorous scientific and technical analysis by scientific peers had given it recognition. The paper contends that nuclear waste stored in a geologic repository, specifically Yucca Mountain, might incur one or more violent nuclear explosions. The authors primarily address the underground emplacement of glassy logs containing weapons plutonium (Pu–239). They purport to demonstrate that after about 10,000 years, separation of plutonium from the waste package combined with geologic action could result in criticality, auto-catalytic actions, and explosive energy release. Dr. Bowman proposes the transmutation of radioactive waste via accelerators to solve the problem.

Los Alamos' internal technical reviews concluded that the paper does not describe a credible sequence of geologic events. The probability that any necessary step-increases in reactivity to criticality, auto-catalysis, and explosive energy release will occur is small. The probability that all three will occur is vanishingly small. Moreover, even if the steps could occur, any energy release would be too small and slow to produce significant consequences either in the repository or on the surface. Los Alamos review scientists have recommended that Dr. Bowman and Dr. Venneri be allowed to propose publication of the paper in a peer-reviewed journal.

SCIENTIFIC CHALLENGE FOR STOCKPILE STEWARDSHIP

Mr. RIGGS. Let me shift the focus for just a moment. You say that the Stockpile Stewardship program is a new approach within the Department of Energy, and you say it poses a major scientific challenge.

Dr. REIS. That is correct, sir.

Mr. RIGGS. I am sure you have touched on that already this morning, but can you briefly elaborate on what you mean by major scientific challenge in implementing that program.

Dr. REIS. Sure. The problem has been in the past in dealing with nuclear weapons we have always had the ability to test, we have always had the ability to, if there were questions about the science, we could always just take it out to Nevada, try it. If it went off, you know, it worked out all right. Frequently, there were debates about that and there were scientific, those were decided out at Nevada.

That is no longer the case, essentially. We have to really go back and understand a lot more about the details of how nuclear weapons work. We have to understand the codes that happen. We have to understand the physics. We have to understand the aging processes that go on in these weapons, not just to the point of saying, well now, there is something wrong. What do I do about it?

We now have to understand them and pick them up before something goes wrong and where there is an opportunity to really make a fix to do something about it. So we have to understand the fusion process better. We have to understand radiative transport problems better.

Frequently, we are able to answer these questions by, if you will, you know, empiricism. Going back and trying, seeing if it works. Oh, now we know what it is. You can go back and fix your codes, fix the computations and do that, so it really is an extraordinarily difficult problem. Fortunately, we have, I believe, the tools to make that happen, and that is why we are, I think, so enthusiastic about the program.

TECHNOLOGY TRANSFER PROGRAM

Mr. RIGGS. That leads me to my last question because I am hard-pressed to understand how the technology transfer in education components fit into this, and I see that you have requested an additional increase in funding of, what, $15 million for a total fiscal year 1996 request of $249 million?

I read the justification. You provide for that in your testimony, and you say activities under the Technology Transfer program support ongoing cooperative activities with the private sector, but a new focus is provided to ensure dual benefit projects directly support the core competencies at the weapons laboratories and the research and development needs of the accelerated strategic computing initiative and advanced design and production and technology efforts. I guess I am sort of with you so far.

Then, you go on to say, other Presidential and Secretarial commitments such as the National Information Infrastructure, the High Performance Computing Initiative, the American Textile Partnership, the Semiconductor Modeling Center, and the Health Care Industries Initiative are also supported. I am hard-pressed to understand how that fits in to maintaining our nuclear stockpile, and furthermore, picking up on the line of questioning I pursued yesterday, I have to tell you, it is very, very difficult to see these, for me anyway, budget requests in light of the criticism by key and very prominent administration figures such as Secretary Reich about corporate welfare. I would like to get your response.

Dr. REIS. Well, we are trying our best. The Technology Transfer program over the past some years has been—you know, was indeed oriented towards two things, towards using the skills and the core competencies and the technologies that have been developed in the weapons laboratories, in the National Laboratories to help support and work with a wide variety of private sector and academic firms, if you will, to leverage, basically leverage in both directions.

What we have done, then, this year is really, you know, take a hard scrub, look at those programs. Most of them we were able to again, reshape as you expressed, to work directly with what we are trying to do in the nuclear weapons programs. Frankly, we weren't able to do that with all the programs that we have committed for. Those are programs, however, which relate, if you will, the core competencies. There is not a direct one-on-one correlation between can't find a piece of a nuclear weapon and a piece of a health initiative kind of directly related, but you can find the skills of the individuals and the programs themselves that go along with that in terms of the computing skills of sensors, in terms of understanding some of the broader scientific problems, and, you know, that is fundamentally the best that those things can go over, and different people can, I think, have fairly different judgments about how valuable that is to the Nuclear Weapons Program.

Mr. RIGGS. I know we are going to have to conclude here momentarily. Let me suggest, perhaps, Dr. Reis, that you and I could have some time together on this or have our staffs get together.

Dr. REIS. I would be delighted to do that.

Mr. RIGGS. Because when I read the rest of the testimony about education initiatives supporting crosscutting, I don't know what that means, science, education activities, ranging from kindergarten to graduate school, the program supports Defense Programs missions through collaborative programs to leverage the unique sources of our National Laboratories and facilities to, quote, support science and math education, through teacher faculty enhancement, curriculum improvements, systematic change, student support, historically black colleges and universities and minority institutions.

That sounds like something that, frankly, if it exists at all in the Federal Government, ought to be under the Department of Education. So I am hard-pressed to believe that this, as you put it, has been scrubbed, hard scrubbed, and rather than come in perhaps to a markup on the fiscal year 1996 appropriations where we might be looking at this area, perhaps we could get together in advance.

Dr. REIS. I would be delighted to do that.

Mr. RIGGS. See what changes we might be able to bring about on this.

Dr. REIS. And get your views on that.

Mr. RIGGS. Thank you, Mr. Chairman.

Mr. MYERS. Thank you, Frank.

In the discussion, again, about the production of tritium sometime, whether it is the year 2008, which it was last year, now it has advanced to 2011, we are gaining on them without ever having to do a thing, but assuming, and I realize the lead time that is necessary, when is a decision going to be recommended by you. Whether it be the accelerator or the reactor?

Dr. REIS. There will be a Record of Decision by November of this year, 1995. Now, we could certainly at any time, the Secretary could recommend a preferred technology and preferred site before that time. That is her decision.

Mr. MYERS. What is predicted lead time before we could have a reactor online for production?

Dr. REIS. The predicted lead time—if I could go back.

Mr. MYERS. I should say a facility.

Dr. REIS. Well, we believe an accelerator could actually be on line in about, you know, six or seven years, and that includes, if you will, the answering of the, if you will, the production questions.

Mr. MYERS. We just happen to have a graph.

Dr. REIS. Just happen to have a graph. It is the same thing. So what you see is with an accelerator. What you see is the accelerator would be on line by about the year 2000, basically 2007, whereas a reactor, we believe, would take longer to actually begin to produce.

Mr. MYERS. Five or six years for an accelerator; is that right?

Dr. REIS. Yes.

Mr. MYERS. Longer for a reactor then?

Dr. REIS. That is correct. That was based on the studies we have done so far.

URANIUM SOLIDIFICATION

Mr. MYERS. One last question I am going to ask today. The IG questioned the necessity for the uranium solidification facility at Savannah River. How can you respond to that question?

Dr. REIS. I can't. I will have to provide it for the record.

[The information follows:]

URANIUM SOLIDIFICATION FACILITY AT SAVANNAH RIVER

In February 1994, Defense Programs concurred in the Savannah River Operations Office recommendation to suspend construction of the Uranium Solidification Facility (USF) project pending further study of alternatives. The logic for this was that with no production reactor operation there was no need to continuously recover uranium from spent fuel to make new fuel. Thus, only a finite amount of highly enriched uranium (HEU) solution and spent fuel require stabilization, hardly enough to justify the costs of USF, and that this material could be better handled by some less costly alternative. The alternatives for stabilizing Savannah River Site (SRS) HEU are being studied in the SRS Interim Management of Nuclear Materials Environmental Impact Statement (EIS). Though not the preferred alternative, completion of USF is being analyzed. The preferred alternative, however, is to blend down the existing HEU-bearing solution, and any that would be produced from stabilizing spent fuel, to low enrichment uranium for storage at SRS. Following the issuance of the Record of Decision for this EIS, expected this summer, final action for the disposition of this project will be taken.

URANIUM SOLIDIFICATION

Mr. MYERS. I thought we were already doing it.

Dr. REIS. Oh, how that was transferred——

Mr. MYERS. I thought we had already vitrified, is that a different process, solidification, it is a different process?

Dr. REIS. I think that is a different process, yes.

Mr. MYERS. See, here again——

Dr. REIS. You and I are in the same boat on this one. We will listen to the knock on that tractor at this time.

Mr. MYERS. I hear the knock, but I don't get any answer. Well, I think—we thank you very much, each of you, for your testimony today. It is an area certainly and a proliferation we have many questions we could have gotten into. How much has leaked out of the former Soviet Union, some of the satellite countries, Kazakhstan, I hope. I understand most of that is in Oak Ridge now. Ask a question about how we are going to dispose of it, who gets the profit if there is any such thing. There is lots of questions we have.

Certainly, I am concerned about North Korea. In fact, if we don't have, we will clean it up, but they still retain the material, the fuel, and Russia the same way, I understand. They want to retain it, which kind of worries me. We do all the work and they still have potentially there the asset they could sell to somebody in the world, so that worries a lot of us on this, but there are a lot of questions we will provide for the record, and so, again, thank each of you very much for your answers today and your participation.

Dr. REIS. Thank you, Mr. Chairman.

Mr. MYERS. The Members are all gone. They have to consider it as classified, unless they know otherwise. I guess they all left the material.

Again, thank you very much. The committee stands in adjournment until 1:00 today.

[The prepared statements of the witnesses and the questions and answers for the record follow:]

WEAPONS NATIONAL LABORATORIES

Mr. Myers. Dr. Reis, with the reduction in the size of the nuclear weapons stockpile, why do we need three weapons laboratories?

Dr. Reis. The challenge before the DOE and its laboratories is not the smaller stockpile, but rather how to maintain confidence in the safety and security of the stockpile without underground testing. This will be accomplished through the Stockpile Stewardship/Stockpile Management program. For this program to succeed the science and technology base of the three laboratories -- Lawrence Livermore, Los Alamos, and Sandia must be maintained. This program is a major scientific and technical challenge, one that will require the talents and skills of the scientists at all three laboratories.

Mr. Myers. The energy research programs at the Department of Energy use peer review to determine laboratory activities while defense programs have used competition between laboratories. Could the peer review concept replace competition in these programs?

Dr. Reis. First, I believe that the terms "competition" and "peer review" may not be very different in their meaning for the nuclear weapon design process. Secondly, the peer base obviously does not exist outside the two design laboratories relative to nuclear weapons. I just do not see how the attributes of peer review could be maintained under the energy research method without compromising national security and our confidence in the safety, security, and reliability of the stockpile. The systems that are being evaluated are so complicated, they must be studied from fundamentally different directions, using different approaches, both experimental and computational. If similar answers are obtained from these differing approaches, then the results have a greater chance of being correct. If the peer review system is attempted at a single facility, with the same management, the same experimental data, and the same computational codes, then the same answers will be obtained, but there will not be any increased level of confidence in the answers. Alternative methods of peer review will be examined to provide the basis for any decision.

GALVIN REPORT

Mr. Myers. Can you discuss the Galvin Report's recommendation that weapons research and development activities at Lawrence Livermore National Laboratory be phased out?

Dr. Reis. The Department supports the study of a careful phase-down of some of Lawrence Livermore's nuclear weapons work, combined with a reemphasis on nonproliferation, counter-proliferation, and verification activities. Timing and details of phase-down will depend on assessment of how best to meet continuing national defense requirements in the absence of testing. Alternative methods of retaining peer review will be examined to provide a basis for any decisions.

VIABILITY OF THE NUCLEAR WEAPONS STOCKPILE

Mr. Myers. Can you explain in layman's terms how the National Ignition Facility, NIF, and the Dual-Axis Radiographic Hydrodynamic Test Facility, DARHT, will contribute to maintaining the viability of the nuclear weapons stockpile?

Dr. Reis. Nuclear weapons work by initiating fission and fusion in materials brought to the proper density and temperature for a specified duration. A number of processes and details determine whether or not the required conditions for nuclear reactions are met.

Without direct testing of weapons, the performance of any weapon is simulated by computer calculations combining physics and engineering principles with data and information from many sources which may include, in the future, DARHT and NIF. Because of aging, all weapons in the enduring stockpile will require surveillance and maintenance. Replacement materials and available manufacturing techniques will change over the years. Subtle chemical changes in materials, in solid-state characteristics of materials, in gaseous content of materials, and geometric changes in material parts, could affect the safety and performance of the weapons. Surrogate devices can be x-rayed while they are being tested with nonnuclear high explosives. The density of the materials that are penetrated by the x-ray is large, the distances penetrated are large (for x-rays), and the exposure times are extremely small (microseconds). These experimental parameters and the radiographic requirements stretch the state of the art in the science of radiography. These concerns are new to the character of the nation's stockpile, and a predictive capability in this area does not yet exist. An upgraded capability in radiography is essential in addressing these concerns. Greater resolution with multi-view and time-sequenced radiographs are required to begin this new phase of diagnostics. The proposed DARHT facility was designed to do just this.

As detonation proceeds in an actual weapon, the densities and temperatures of the materials increase beyond any other process occurring on Earth. This is required for fusion to occur. The physical processes occurring in the anticipated, fusion-ignited capsule of the NIF would be similar to those in a weapon even though the capsule for the NIF would not be like a weapon. Designing the experiments at NIF to ignite is a difficult problem that would attract and challenge highly skilled scientists. The NIF would uniquely provide physics information on the processes, especially transfer of radiation and energy, that control the performance of a weapon at its highest temperature and density.

Data from proposed facilities like DARHT and NIF would assist in evaluating whether or not small changes in the weapons will lead to changes in their performance. These facilities could contribute to maintaining the viability of the nuclear weapons stockpile.

NEW TRITIUM SOURCE

Mr. Myers. Can you discuss the advantages and disadvantages of an accelerator or reactor as a new tritium source?

Dr. Reis. With regard to environment, safety, and health considerations, the accelerator option uses no fissile material, therefore generating no spent fuel. It produces much less low level and hazardous waste than the reactors, and has no potential for a severe accident having offsite consequences. Therefore, from an environment, safety, and health perspective, the accelerator is relatively "site-neutral," whereas there are substantially different impacts (particularly potential accident impacts) for the reactors, depending upon the site selected for evaluation. The reactor options have less potential to impact water resources and do not have the environmental impacts associated with an accelerator's relatively large demand for power. The accelerator, however, is easier to decontaminate and decommission at the end of life than a reactor. The environment, safety, and health impacts of the accelerator and each of the reactor options are discussed in Chapter 4 of the Draft Tritium Supply and Recycling Programmatic Environmental Impact Statement, which has now been published for public review and comment.

The Department is also examining technology, cost, institutional, and policy issues associated with each option. Completion of these analyses is necessary to support a decision on a tritium production source, and to provide a complete and comprehensive discussion of the pros and cons associated with each option.

GALVIN REPORT

Mr. Myers. The laboratory directors told the Galvin task force that they could reduce costs by 10% to 40% with less oversight from the Department and fewer audits. Now that the Secretary has committed to reduce these administrative burdens, how could your fiscal year 1996 budget request for the laboratories and weapons facilities be adjusted?

Dr. Reis. We believe that the full achievement of the Secretary's commitment to reduce the oversight burden on the laboratories will take several years. Our FY 1996 budget request has assumed a reduction of $25 million as the first step in implementing the Secretary's commitment to contract reform; strategic realignment; and the Galvin report. We expect that additional savings will be realized from these initiatives over the next 5 years. At this point, projecting additional savings in FY 1996 beyond the $25 million amount would be premature.

WEAPONS ACTIVITIES

Mr. Myers. Does the Department of Defense have any concerns about the sufficiency of DOE's budget request for nuclear weapons activities and the ability of DOE to maintain the professional cadre of nuclear weapons personnel to assure the safety, security, and reliability of our nuclear deterrent?

Dr. Smith The FY 1996 budget will marginally maintain an adequate level to sustain crucial capabilities. As a result of the recent retirement of a number of our most experienced weapon designers and engineers, the DOE work force can only handle currently funded programs. It is imperative that functions delineated in the NPR (such as refabrication and certification of weapons in the enduring stockpile, enhanced surveillance, and weapons design capabilities) be performed by a trained, enthusiastic staff of technical experts and be fully funded in any budget.

Mr Myers. Are you comfortable with DOE's approach to science based stockpile stewardship in the absence of nuclear testing?

Dr. Smith. With several caveats, the answer is "yes." Nothing ensures confidence in the stockpile as definitively as a nuclear test. Science Based Stockpile Stewardship (SBSS) is currently the best alternative to testing and will help us gain a greater understanding of the health of the enduring stockpile as it ages. As stated in the NPR, DOE must develop a stockpile surveillance engineering base, demonstrate the capability to refabricate and certify weapon types in the enduring stockpile, develop and maintain needed facilities and capabilities and, develop a tritium source. In the future, DOE must also have the capability to conduct a hydronuclear experimental program, if consistent with national policy and international treaty obligations.

DOE is working to address these concerns. Projected funding profiles are at a minimum level in FY 1996 -- they must increase in the out years. Without a strong commitment to sustain the enduring stockpile, expertise will erode. An adequate and stable funding base must be provided. The DOE needs to present their full stockpile stewardship plan and allow the Nuclear Weapons Council to review the plan based on concerns from the Services, Joint Staff, and OSD. The DOE must implement the jointly developed program for DoD to be assured of the highest possible level of confidence in the stockpile.

Mr. Myers. Does DOE have the capability to design, fabricate, and certify replacement nuclear warheads in the absence of underground testing as required by the NPR?

Dr. Smith. The capability does not exist today. There is no current requirement from DoD to DOE concerning these activities for any specific warhead. The DoD and DOE must jointly develop a certification process for refabricated warheads. The Nuclear Weapons Council will continue to encourage work to ensure certifiable warheads can be designed and fabricated.

WEAPONS ACTIVITIES

Mr.Myers. What is the current DoD thinking on the most likely national security threat this Nation faces?

Dr. Smith. From my perspective as the Secretary's advisor on nuclear weapons, the current absence of a means to produce tritium -- an isotope of hydrogen required for all US weapons to operate -- represents the greatest risk to the US stockpile of nuclear weapons, both today and over the long term. Because tritium decays at a rate of 5.5% per year, we must have a supply to sustain the enduring stockpile, which, in turn, serves as the foundation of US national security posture. Today, the stockpile is maintained by reclaiming the tritium that remained in the significant number of weapons that the US has retired as we have emerged from the Cold War with Russia. This will continue for a number of years; however, we will eventually need an assured supply of tritium to avoid a catastrophic failure of the stockpile.

The DOE must secure a reliable source of tritium and a contingency source using existing light-water reactors should an unforeseen demand or catastrophic loss of the current tritium stores occur. Both of these efforts are endorsed by the Nuclear Weapons Council as essential to the efficacy of the stockpile.

WEAPONS ACTIVITIES

Mr. Myers. Please describe any programs in which the U.S. weapons laboratories are cooperating with their counterparts in Russia.

Mr. Baker. There are a number of programs in which U.S. and Russian laboratories cooperate.

Lab-to-lab programs. As early as 1991, even before the breakup of the Soviet Union, the Department of Energy recognized the need for an imaginative program of laboratory-to-laboratory cooperation to assist in reorienting the Soviet nuclear establishment away from nuclear weapons. Several hundred small projects have evolved, designed to promote effective scientific cooperation without promoting or proliferating weapons capabilities.

Safe, Secure Dismantlement (SSD). The DOE labs provide materials and systems for transportation and storage of nuclear weapons; equipment and training for nuclear weapon accident response; and railcar conversion kits. This activity was initiated under the original SSD program.

Materials Protection, Control, and Accountability (MPC&A). Given the large amount of fissile material in Russia, effective MPC&A is vital. Our laboratories are working with Russian labs to implement control systems at Russian nuclear material facilities; to train Russian scientists on modern computerized control systems; and to implement physical protection plans.

Science and Technology Centers. DOE provides support to the Department of State for the Science and Technology Centers in Russia and the Ukraine, which fund former Soviet weapon scientists on non-military applications. For instance, two laboratory scientists are on the staff of the Center in Moscow, and another serves as Scientific Advisor to the State Department on proposals to the Center. DOE support is focused on reviewing and assessing proposals.

Industrial Partnering Program (IPP). The laboratories also play a key role in the IPP, which is also designed to redirect the efforts of scientists and engineers formerly involved in Soviet weapons programs toward activities associated with peaceful commercialization. It combines the strengths of the DOE laboratories with those of U.S. industry to satisfy nonproliferation objectives.

Negotiations Support. The laboratories also provide technical and scientific advice to the U.S. delegations on nuclear weapons-related bilateral negotiations. These include: reciprocal exchanges of nuclear stockpile information; measures to ensure that excess nuclear materials are not used in new weapons development; exchange visits to develop inspection procedures for stored fissile materials from dismantled weapons; confirmation of possible bilateral nuclear material declarations; shutdown of Russian plutonium production reactors; and monitoring procedures agreed to in connection with the purchase of Russian highly enriched uranium.

AGE OF WEAPONS IN THE STOCKPILE

Mr. Myers: In the year 2010, what will be the average age of the weapons in the nuclear stockpile? Has DOE had experience with weapons that old? What types of problems would you expect at that age?

Dr. Reis: By 2010, the average age of the entire active weapons stockpile will be approximately 28 years. We have had experience dealing with a limited number of some specific weapons which were that old. At that age, problems could potentially surface in any weapon component. Historically, DOE has encountered age-related problems affecting operations and maintenance, reliability, safety, tritium recovery, and command and control.

NUCLEAR TESTING MORATORIUM

Mr. Myers. Under what conditions would the U.S. consider performing an underground nuclear weapons test?

Dr. Reis. In a statement issued January 30, 1995, the President's National Security Advisor announced that the President was extending the current nuclear testing moratorium until a Comprehensive Test Ban (CTB) Treaty enters into force on the assumption that a treaty will be signed before September 30, 1996. The President has stated previously that his decisions regarding cessation or resumption of U.S. nuclear testing are based on weighing the contribution further tests would make to improving the safety and reliability of the U.S. arsenal in preparation for a CTB versus three other factors: the level of nuclear testing engaged in by other nations, the degree of progress of CTB negotiations, and the potential adverse impact a resumption of nuclear testing by the U.S. might have to our nonproliferation goals. A decision by the President to resume nuclear testing would depend on the then current status of these four factors.

WEAPONS STORAGE

Mr. Myers. Describe the current plan to store plutonium pits from retired weapons. When will you run out of interim storage capacity at Pantex? What is the contingency plan at that time?

Dr. Reis. The plan to store plutonium pits from retired weapons is currently guided by the Secretary's commitments to the public January 19, 1994, upon issuing the Finding of No Significant Impact to the interim storage of plutonium components (pits) at Pantex. The Secretary stated that no more than 12,000 pits would be stored until the completion of a Site-Wide Environmental Impact Statement and Record of Decision by November 15, 1996. The limit of 12,000 pits well exceeds the number of scheduled dismantlements to be accomplished before the stipulated date for the Record of Decision.

Pantex has sufficient storage capacity to handle pits from all weapons currently planned for retirement. Subject to the Record of Decision, either Pantex will continue to store pits on an interim basis, or one of the other alternative sites being studied in the Site-Wide Environmental Impact Statement will take on the responsibility. Several Department of Energy and two

Department of Defense sites are presently being reviewed for inclusion as alternatives in the Site-Wide Environmental Impact Statement.

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LABORATORY FUNDING AND FULL TIME EQUIVALENTS

Mr. Myers. By laboratory, identify the number of FTE's funded in the weapons program for each year since 1980, and provide the weapons funding for each laboratory by year.

Dr. Reis. The full time equivalent (FTE) information and total laboratory funding for each laboratory by year is shown in a table which I would like to insert for the record. The information follows:

LABORATORY FULL TIME EQUIVALENTS (FTE's)

	LLNL	LANL	SNL	TOTAL
Weapons Research, Development & Testing and Production & Support				
1980	3,457	2,789	4,214	10,460
1981	3,705	3,032	4,185	10,922
1982	3,704	3,094	4,285	11,083
1983	3,957	3,120	4,396	11,473
1984	3,889	3,224	4,482	11,595
1985	3,970	3,237	4,669	11,876
1986	3,757	3,128	4,520	11,405
1987	4,240	3,333	4,497	12,070
1988	3,841	3,173	4,278	11,292
1989	3,742	2,950	4,257	10,949
1990	3,550	3,186	4,714	11,450
1991	3,156	3,014	4,293	10,463
1992	3,322	3,113	4,513	10,948
1993	3,133	3,507	4,273	10,913
Weapons Stockpile Stewardship and Management				
1994	3,122	2,933	4,367	10,422
1995 est.	2,920	3,055	4,264	10,239
1996 est.	2,920	2,818	4,337	10,075

LABORATORY OPERATING FUNDING
(Dollars in Millions)

	LLNL	LANL	SNL	TOTAL
Weapons Research, Development & Testing and Production & Support				
1980	$145.1	$127.9	$250.2	$523.2
1981	181.5	181.5	159.9	522.9
1982	216.0	204.5	372.0	792.5
1983	235.2	226.2	400.0	861.4
1984	310.6	300.3	474.2	1,085.1
1985	356.2	334.7	526.5	1,217.4
1986	373.5	331.1	524.4	1,229.0
1987	319.8	338.1	533.8	1,191.7
1988	314.6	437.8	573.0	1,325.4
1989	347.0	342.6	582.0	1,271.6
1990	371.1	360.4	588.6	1,320.1
1991	352.4	358.8	588.6	1,299.8
1992	389.8	406.7	648.1	1,444.6
1993	401.0	455.5	594.2	1,450.7
Weapons Stockpile Stewardship and Management				
1994	371.1	409.9	598.7	1,379.7
1995 est.	342.6	391.8	563.4	1,297.8
1996 est.	365.6	447.4	605.7	1,418.7

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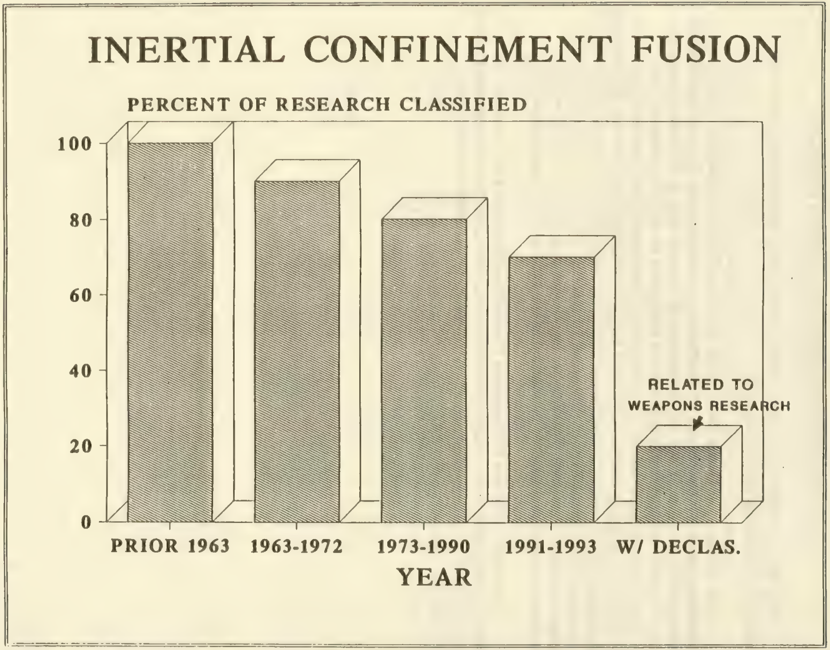
DECLASSIFICATION/INERTIAL FUSION PROGRAM

Mr. Myers. What is the status of the review of the classification policy as it pertains to the inertial fusion program?

Mr. Baker. On December 7, 1993, Secretary O'Leary announced a major declassification of a large portion of information pertaining to the Inertial Confinement Fusion (ICF) program. It was the culmination of a major shift in ICF classification policy to allow international cooperation in most areas of the ICF program. That declassification included information concerning laboratory targets, calculations, modeling and experiments for unclassified targets, and information relevant to the energy applications of ICF and ICF equipment fabrication techniques. As a result of the December 1993 declassification, only about 20 percent of ICF remains classified since it relates to weapons research regarding testing, design, and data for nuclear weapons purposes as shown in a chart to be inserted in the record. The chart is attached.

Currently, there is a Fundamental Review to examine all DOE classification policy in terms of national security objectives in the post-Cold War environment that will also include ICF. These efforts could result in further declassifications of ICF information.


INERTIAL CONFINEMENT FUSION
PERCENT OF RESEARCH CLASSIFIED
100
80
60
40
20
0
RELATED TO
WEAPONS RESEARCH
PRIOR 1963
1963-1972
1973-1990
1991-1993
W/ DECLAS.
YEAR

INERTIAL CONFINEMENT FUSION

Mr. Myers. What is the fiscal years 1994, 1995, and 1996 funding proposed for each laboratory and facility in the inertial fusion program at the detailed program level?

Dr. Reis. The proposed funding by laboratory and facility within the Inertial Confinement Fusion program for FY 1994, 1995, and 1996 is shown in a table which I would like to insert for the record. The information follows:

FY 1996 Congressional Budget - Inertial Confinement Fusion

	FY 1994 Actuals	FY 1995 Approp.	FY 1996 Cong. Req.
OPERATING EXPENSES			
Indirect Drive with Glass Laser Driver			
LLNL	77,277	77,000	85,104
LANL	17,700	16,400	17,358
Subtotal Ind. Drive w/Glass Laser	94,977	93,400 [a]	102,462
National Ignition Facility			
LLNL	4,800	0	0
LANL	500	0	0
SNL	700	0	0
NIF - HQ	0	6,000	23,600
Subtotal National Ignition Facility	6,000	6,000 [a]	23,600
Direct Drive with Glass Laser Driver			
University of Rochester	15,753	18,265	18,200
KrF Laser			
LANL	1,800	0 [b]	0
NRL	7,765	8,050	8,000
Subtotal KrF Laser	9,565	8,050	8,000
Light Ion Beams			
SNL	25,221	25,500	26,781
Capsule Fabrication and Development			
LANL	619	4,200	4,464
SNL	989	0	0
General Atomics	8,671	8,900	9,059
KMS	3,838	0	0
Subtotal Capsule Fab. & Development	14,117	13,100	13,523
Other	3,572	2,440	2,783
TOTAL OPERATING EXPENSES	169,205	166,755	195,349
CAPITAL EQUIPMENT			
LLNL	3,560	4,000	2,300
LANL	900	500	400
SNL	900	700	700
NRL	450	700	500
University of Rochester	9,450	2,500	1,900
General Atomics	300	300	500
Other	300	1,018	1,618
Subtotal Capital Equipment	15,860	9,718	7,918
CONSTRUCTION			
96-D-111 National Ignition Facility -HQ	0	0	37,400
TOTAL ICF	185,065	176,473	240,667
Use of PY Balances		(3,300)	
TOTAL NEW BA - ICF	185,065	173,173	240,667

[a] Funds for NIF in FY 1995 were requested and provided under Indirect Drive w/Glass Laser.

[b] The FY 1995 column reflects funding as appropriated and does not reflect $670,000 that LANL will use in FY 1995 for final close-out costs associated with the KrF Laser Program. These funds will be made available from LANL's Indirect Drive Program ($300,000) and LANL's Capsule Fabrication Program ($370,000).

INERTIAL CONFINEMENT FUSION

Mr. Myers: Describe the accomplishments of the inertial fusion program in fiscal years 1994, 1995, and 1996 and describe program plans for each facility in fiscal years 1995 and 1996.

Dr. Reis: I am pleased to describe the fine success of the Inertial Confinement Fusion (ICF) program.

In fiscal year 1994, the ICF Program accomplishments were:

Continued the Hohlraum Laser Physics (HLP) portion of the Nova Technical Contract (NTC), a series of experiments and associated computational modeling that demonstrated an understanding of the energetics and symmetry in Nova hohlraums under conditions close to those in ignition hohlraums.

Continued the Hydrodynamically Equivalent Physics (HEP) portion of the NTC that measured the performance of ICF targets. In this context an ICF target is a capsule that implodes upon irradiation by a laser.

Experimentally demonstrated low levels of laser plasma instabilities in both planar and spherical targets which were in good agreement with target design codes.

Completed Precision Nova project expanding the envelope of key fusion physics experiments which can be performed.

Completed the final construction of Beamlet, the laser demonstrating the physics and engineering for one of the 192 National Ignition Facility (NIF) laser beams. Technical milestones were met on time and within budget.

Completed NIF Conceptual Design Review (CDR) successfully demonstrating the multi-laboratory national NIF team, and obtained an independent, collaborating cost estimate.

Continued construction of the Omega Laser Upgrade project on budget and on schedule.

Determined the cause and proposed means of controlling parasitic loads in ion beams, which absorb energy from the beam and makes Particle Beam Fusion Accelerator (PBFA-II) less efficient.

Developed a three-dimensional analytic theory of ion beam divergence.

Conducted first two-stage-diode experiments on PBFA II. This provided data used to improve beam focusing.

Fabricated and delivered over 1000 complex targets for the experimental target physics programs on Nova, Trident and PBFA II from the ICF target production facility.

Demonstrated cryogenic fuel layers with surface roughness of less than 2 micrometers to increase target implosion symmetry and thereby increase the possibility for ignition.

Completed construction of the Nike Krypton Fluoride (KrF) laser, which will produce ultra smooth laser beams that can be used to evaluate the sensitivities of hydrodynamic instabilities to laser beam nonuniformities.

Advanced the calculational state of the art of laser-target coupling and hydrodynamics relating to the ultra-smooth 248 nm laser beams achievable with KrF.

Completed the first phase of the Mercury KrF laser and preliminary experiments and began 18-month decontamination and decommissioning of the facility consistent with DOE regulations.

In fiscal year 1995, the ICF program plans to accomplish:

Complete the HEP portion of the NTC using gas-filled hohlraums in later experiments to gain a better understanding of issues for NIF with respect to symmetry and laser-plasma instabilities. This leads to three broad areas for continuing investigations in fiscal years 1995-96: convergent hydrodynamics and mix, laser-plasma instability, and hohlraum dynamics.

Validate computational modeling of NIF target designs with experiments on Nova.

Continue operation of the Beamlet laser and other experimental and theoretical activities designed to enhance glass laser technology.

Complete the NIF point target design and initiate sensitivity studies to achieve ignition.

Complete Omega Upgrade Construction with start of operation in April 1995.

Demonstrate further decrease in ion-beam-divergence so that the beam intensity on target will be sufficient to generate required hohlraum temperatures.

Achieve a 100 eV radiation temperature in a hohlraum with a focused lithium ion beam as a demonstration of beam improvement and to achieve a useful target physics temperature.

Develop and test a high-efficiency two-stage diode on PBFA II to study effect on beam divergence.

Provide in excess of 1000 specialized targets for the experimental target physics campaigns on Nova, Trident and PBFA II, including NIF scaling targets (ongoing).

Develop smoother cryogenic fuel layers for use in Omega Upgrade and NIF targets (ongoing) to demonstrate target fabrication technique required for ignition and burn.

Develop Beryllium capsule fabrication techniques for use on NIF (projected) as this material may be used in ignition targets.

Develop hohlraum characterization and total neutron yield measurement techniques for use on NIF and prototype them on Nova and Saturn (projected).

Characterize Nike laser performance and demonstrate drive fluence nonuniformity of less than 1% rms, using direct laser measurements and accelerated foil techniques.

Perform flat plane laser target experiments with the Nike laser to study the growth of hydrodynamic instabilities with low initial nonuniformity.

Complete the decommissioning of Mercury KrF laser.

Complete the nonproliferation study of NIF as required for the Dellums' process and Key Decision One.

Continue NIF design and initiate National Environmental Policy Act documentation and preliminary safety analysis report for NIF including:

- Complete the quality assurance plan
- Complete a comprehensive Environment, Safety & Health plan
- Complete a Fire Hazards Analysis
- Complete Preliminary Safety Analysis Report
- Begin Environmental Impact Statement (EIS) preparation

The ICF program plan for fiscal years 1995 and 1996 is to continue operation of the four major ICF facilities (Nova, Omega Upgrade, Nike, and PBFA-II). The respective programs include both a significant experimental program investigating high energy density beam interaction with matter (i.e., target physics) and driver technology development. The program plan for each facility is summarized in the following paragraphs, which I would like to insert in the record. The information follows:

PROGRAM PLANS

NOVA facility at LLNL - LLNL along with LANL will pursue ignition target physics issues described by the Nova Technical Contract and modified by DOE ICF Advisory Committee (ICFAC). Additional activities would include advanced ICF concepts, such as exploring the fast ignitor concept, in support of risk reduction activities for ignition. The Nova laser facility will continue to conduct ignition target optimization studies (design and experiment) and weapons physics experiments in support of stockpile stewardship. In support of the NIF initiative in FY 1996, the ICF program will continue laser, optics, and target area (including diagnostics) technology development. The technology development will ensure design optimization and cost minimization of the NIF.

In particular, experiments to verify calculations supporting the use of gas filled hohlraums will be carried out. Experiments to advance required technologies in diagnostics, cryogenics, large capsules and target chamber materials will also be done. The use of Nova to carry out direct drive studies is also planned. These will support the decision on incorporation of direct drive capability on the NIF. The incorporation of the petawatt-picosecond laser into this facility will permit exploring novel approaches to fusion such as the Fast Ignitor which could substantially enhance the capability of future facilities.

OMEGA facility at University of Rochester Laboratory for Laser Energetics - A major upgrade of the OMEGA glass laser facility will be completed in fiscal year 1995. After the facility is made operational, a series of experiments to determine the feasibility of using direct drive to achieve fusion will be done. These will include determining the effects of beam quality and symmetry on hydrodynamic instabilities that occur during capsule implosions and the study of laser plasma interactions that contribute to scattering and absorptive losses of the incoming beam. In addition to direct drive experiments this facility will also be used to develop diagnostics in conjunction with LLNL and LANL for NIF-related experiments. Although cryogenic target experiments are not scheduled to begin until fiscal year 1998, the development of the target handling and insertion system has commenced and will continue until then.

Nike facility at Naval Research Laboratory - The Nike KrF laser facility is also scheduled for completion in fiscal year 1995. This involves completion of the target chamber and all optics leading to the chamber, and the beginning of target experiment with 44 laser beams. The plans are to demonstrate a drive fluence and ablation pressure non-uniformity of less than 1 percent in a 4-ns pulse using both direct laser measurements and diagnostics of an accelerating foil. It will also be used to evaluate various methods of stabilizing the growth of the ablative Rayleigh-Taylor instability to satisfy the requirements of an ignition capsule. The understanding of hydrodynamic instabilities is necessary for weapons science as well as ICF.

PBFA-II facility at SNL - PBFA-II is a light ion accelerator used to study the feasibility of using high energy lithium beams to achieve capsule implosions. This machine is directed at developing the technology required for demonstrating high yield for applications in weapons physics, weapons effects and potential energy production. High yield will require an efficient, cost effective driver that can deliver ~ 10 MJ of energy to the appropriate target. Fiscal year 1995 objectives include completion of the analysis of a lithium target experimental series and documentation of the ion conversion efficiency, heated target foam radiation transparency, the effectiveness of foam tamping of gold wall motion, and evidence for radiation smoothing in an ion heated hohlraum design. Experiments will also be performed to evaluate the potential of pulsed power driven imploding plasmas as a radiation source for transport experiments relevant to NIF foot physics, weapons physics, and high yield target physics. The fiscal year 1996 plans include optimization of the ion beam focus in a new PBFA-II extraction diode, performance of high yield and NIF ignition target initial D-T adiabat (foot) physics experiments at the appropriate drive temperature (~100 eV), construction of a transmission grating spectrograph, a soft x-ray imager, and a neutron yield detection system for application to high yield target physics and NIF diagnostics.

NONNUCLEAR CONSOLIDATION

Mr. Myers. Please describe the nonnuclear consolidation program including total costs and milestones, and costs and activities to be performed in fiscal years 1994 and 1995.

Mr. Reis: The Nonnuclear Reconfiguration program involves consolidating the activities from three donor sites, Mound, Pinellas, and Rocky Flats plants, into five receiver sites; the Kansas City Plant, the Sandia National Laboratories/New Mexico (SNL/N.M.), the Los Alamos National Laboratory, the Savannah River Site and the Lawrence Livermore National Laboratory (LLNL).

Reservoir Surveillance Operations and Gas Transfer Systems are being consolidated at Savannah River; BerylliumTechnology, Neutron Tube Target Loading, Pit Support operations, and High Power Detonator operations are being consolidated at Los Alamos; mechanical and electronic assemblies are being consolidated at the Kansas City Plant; Thermal Batteries, Milliwatt Generator Heat Sources, Neutron Generators, and SNL/N.M.-specific Explosive Component Surveillance operations are being moved to SNL/N.M.; and LLNL-specific Explosive Component Surveillance operation are being moved to LLNL.

The multi-year nonnuclear reconfiguration activities will continue through fiscal year 2001, with most activities being complete by fiscal year 1998. The total cost for reconfiguring the weapons complex is currently baselined at $447 million.

Currently, the transfer of equipment, gauges, testers, and design and production records is in progress. In addition, facility design and construction activities related to the transfer of equipment is in progress at all five receiver sites. By the end of fiscal year 1996, it is expected that all transferred activities will be complete from the donor facilities. By the end of calendar year 1996, we will be obtaining the first qualifications of products and processes at some receiver sites. The budget authority requirements for FY 1994 and FY 1995 were $137 million and $121 million respectively. I would like to insert in the record a table showing the project completion milestones. The information follows:

Schedule Summary
Major Milestone Completions

(# represents the number of activities for which the milestone will be completed that year)

Milestone	FY1994	FY1995	FY1996	FY1997	FY1998	FY1999	FY2000	FY2001	Total
Prebuilds	8								8
Title I Design	5	3	2						10
Title II Design	6	8	6						20
Title III Inspection	1	2	2	4	2				11
Construction	3	7	5	3	3				21
Capital Equipment	0	5	10	4	1	1			21
Facility Operations	0	5	5	6	5				21
Inventory Transfer	1	15	3	1					20
Provide Documentation	0	9	7	4	0	1			21
Provide Tools, Gages & Test Equipment	0	7	6	3	2				18
Provide Staff	5	5	2	4					16
Activity Qualification	0	0	2	3	6	3	4	1	19

TECHNOLOGY TRANSFER ACTIVITIES

Mr. Myers. Please list the technology transfer activities which will be conducted by each laboratory in fiscal years 1994, 1995, and 1996, including funding for each task.

Dr. Reis. I would like to provide a table to be inserted in the record, which lists the Technology Transfer operating expense activities conducted by each laboratory, including funding, for fiscal years 1994, 1995, and 1996. Though the majority of program funds go to the three laboratories, some funds are provided to other facilities for program activities, for example, the Y-12 Production Plant, the Kansas City Production Plant, the Nevada Test Site, and the Oakland Operations Office. The following table reflects each laboratory's FY 1994 actual costs, and estimates for FY 1995 and FY 1996 have been revised slightly since the budget was submitted, based on the current status of executed cooperative research and development agreements. The information follows:

TECHNOLOGY TRANSFER
FUNDING PROFILE
(in Millions of Dollars)

LAWRENCE LIVERMORE NATIONAL LABORATORY

	FY 1994	FY 1995	FY 1996
Major Partnerships			
National Information Infrastructure	$ 2.7	$ 2.2	$ 1.9
Integrated Circuit Manufacturing Program	9.9	6.2	8.0
Automotive	10.2	6.5	12.9
Flat Panel Displays	2.4	3.7	2.4
High Performance Computing Program	0.0	1.7	6.0
AMTEX	1.7	3.3	3.0
Agile Manufacturing	0.7	2.3	1.6
Machine Tool Program	3.5	1.2	1.0
Medical Systems Engineering	1.0	0.7	1.2
Materials & Processes for Manufacturing (Aircraft Engineering)	2.2	0.0	1.3
Laboratory Partnerships	15.1	26.6	24.7
Small Business Initiative	1.8	2.0	2.0
TOTAL	$51.2	$56.4	$66.0

LOS ALAMOS NATIONAL LABORATORY

	FY 1994	FY 1995	FY 1996
Major Partnerships			
National Information Infrastructure	$ 4.1	$ 1.3	$ 1.9
Integrated Circuit Manufacturing Program	3.7	2.2	6.5
Automotive	10.1	4.5	11.6
Flat Panel Displays	0.7	1.0	1.2
High Performance Computing Program	0.4	1.4	6.0
AMTEX	1.0	1.1	3.0
Agile Manufacturing	0.7	1.0	1.0
Machine Tool Program	1.0	0.5	1.0
Medical Systems Engineering	1.0	1.1	2.0
Materials & Processes for Manufacturing (Aircraft Engineering)	1.6	0.0	1.3
Laboratory Partnerships	13.4	21.4	17.5
Small Business Initiative	1.8	2.0	2.0
TOTAL	$39.5	$37.5	$55.0

SANDIA NATIONAL LABORATORY

	FY 1994	FY 1995	FY 1996
Major Partnerships			
National Information Infrastructure	2.0	2.8	1.9
Integrated Circuit Manufacturing Program	27.6	5.2	16.5
Automotive	11.7	14.9	18.7
Flat Panel Displays	5.5	1.5	2.5
High Performance Computing Program	0.1	9.7	7.0
AMTEX	2.1	4.7	3.0
Agile Manufacturing	1.5	2.2	2.7
Machine Tool Program	1.2	0.7	1.0
Medical Systems Engineering	6.1	1.6	4.9
Materials & Processes for Manufacturing (Aircraft Engineering)	0.4	1.1	1.3
Laboratory Partnerships	20.6	27.6	17.4
Small Business Initiative	1.8	2.0	2.0
TOTAL	$80.6	$74.0	$78.9

TECHNOLOGY TRANSFER ACTIVITIES

Mr. Myers. What percentage of Technology Transfer funds in fiscal years 1994, 1995 and 1996 are used to fund mortgages versus new projects?

Dr. Reis. In FY 1994, 73 percent, or approximately $158,000,000 of the $217,733,000 budget appropriation was used for existing mortgages.

In FY 1995, 82 percent or approximately $176,000,000 of the $215,794,000 budget appropriation is scheduled for existing mortgages.

In FY 1996, 82 percent or approximately $187,000,000 of the $229,405,000 budget appropriation is scheduled for existing mortgages.

DISCRETIONARY FUNDING BY LABORATORY

Mr. Myers: What amounts are included for the discretionary funding of the laboratory directors in fiscal years 1994, 1995, and 1996? By laboratory please provide the amount of funding and the percentage of total funding allowed for discretionary purposes.

Dr. Reis: The amounts allotted to the Laboratory Directed Research and Development (LDRD) activities are based on an approved percentage of all laboratory funding. The percentages and estimated amounts for fiscal years 1994-96 are shown in a table, which I would like to insert in the record. The information follows:

DISCRETIONARY FUNDING BY LABORATORY
(in Thousands of Dollars)

	FY 1994	FY 1995 (Est)	FY 1996 (Est)
Los Alamos National Laboratory	$65,600 5.8%	$64,000 5.9%	$59,250 6.0%
Lawrence Livermore National Laboratory	$53,300 6.0%	$51,200 6.0%	$51,000 6.0%
Sandia National Laboratory	$61,500 4.7%	$72,500 5.6%	$67,300 5.6%

REIMBURSABLE WORK

Mr. Myers. For each defense facility by appropriations account, please identify the amount of reimbursable work performed for other federal agencies and other than federal agencies in fiscal years 1994, 1995, and 1996.

Dr. Reis. I would like to submit tables for the record which show the amount of reimbursable work performed for other federal agencies and other than federal agencies in FY 1994, FY 1995, and FY 1996 at the DOE defense facilities. The information follows:

REIMBURSABLE WORK PERFORMED - FEDERAL AGENCIES
Weapons Activities
(obligations in thousands)

	FY 1994 Actual	FY 1995 Estimate	FY 1996 Estimate
Amarillo Plant	$ 1,460	$ 425	$ 500
Ames Laboratory	29	60	60
Argonne National Laboratory	30,101	39,600	40,100
Bettis Atomic Power Laboratory	5,131	4,800	4,800
Brookhaven National Laboratory	6,716	2,934	2,869
Idaho Natl Engineering Lab	65,384	59,550	61,550
Kansas City Plant	-264	6,294	10,167
Knolls Atomic Power Laboratory	1,000	3,800	3,800
Lawrence Berkeley Laboratory	3,245	604	137
Lawrence Livermore Laboratory	82,045	76,539	48,627
Los Alamos Scientific Laboratory	85,310	100,934	100,080
MMES-Oak Ridge Central	190,200	111,606	113,013
Mound Laboratory	1,751	200	100
National Renewable Energy Lab	593	1,413	1,400
Nevada Test Site	94,762	113,207	118,602
Oak Ridge Institute for Science and Education	6,154	3,772	3,381
Pacific Northwest Laboratory	52,418	53,000	53,000
Pinellas Plant	-217	0	0
Rocky Flats Plant	-42	0	0
Sandia Laboratories	239,056	272,869	271,822
Savannah River Laboratory	4,480	3,400	3,400
TOTAL - FEDERAL AGENCIES	**$ 869,312**	**$ 855,007**	**$ 837,408**

REIMBURSABLE WORK PERFORMED - NON-FEDERAL ENTITIES
Weapons Activities
(obligations in thousands)

	FY 1994 Actual	FY 1995 Estimate	FY 1996 Estimate
Amarillo Plant	$ 15	$ 200	$ 200
Kansas City Plant	1,336	500	500
Lawrence Livermore Laboratory	2,499	0	0
Los Alamos Scientific Laboratory	6,787	22,000	22,000
Lovelace Biomed & Environmental Res Lab	853	1,000	1,000
MMES - Oak Ridge Central	-2	0	0
Mound Laboratory	162	2,000	2,000
Nevada Test Site	-8,371	3,100	9,650
Pinellas Plant	1,336	4,800	4,800
Rocky Flats Plant	528	500	500
Sandia Laboratories	19,588	22,000	22,000
TOTAL - NON-FEDERAL ENTITIES	**$ 24,731**	**$ 56,100**	**$ 62,650**

EMERGENCY RESPONSE ACTIVITIES

Mr. Myers. How are the emergency response activities funded by Defense Programs coordinated with the Office of Emergency Management? Why aren't all emergency response activities funded under a central office in Department of Energy? Are there cost efficiencies which could be realized with consolidation?

Dr. Reis. The "emergency response" activities, funded under Weapons Activities Stockpile Management, maintains the Department's seven emergency response assets, which include: the Nuclear Emergency Search Team; Accident Response Group; Aerial Measuring System; Atmospheric Release Advisory Capability; Federal Radiological Monitoring and Assessment Center; Radiation Emergency Assistance Center/Training Site; and Radiological Assistance Program.

These Departmental assets represent the tangible technical and operational capability of the United States Government to respond to a radiological or nuclear incident/accident anywhere in the world. These assets represent people, equipment, and an exercised capability for a response to those incidents/accidents. The personnel include: scientists, engineers, technicians, and support personnel already working in weapons-related activities, yet who volunteer to support this emergency response mission. The response personnel are drawn from the weapons-related programs and operate equipment uniquely designed to support this mission, Defense Programs at the Department of Energy is the appropriate Government entity to fund and maintain this capability. The ability to draw upon nuclear weapons experts is vital in ensuring these capabilities are immediately available for emergencies.

The Department maintains the Office of Emergency Management within the Office of Nonproliferation and National Security. That office establishes policy, guidance, and maintains oversight of all "emergency management" activities within the Department. The range of potential emergencies or incidents involving Departmental programs requires unique knowledge and skills. These capabilities reside in the program offices. Common practices; communication systems and protocols; and independent evaluation and oversight help to eliminate inconsistencies and avoid redundancy while providing integration and compatibility of Departmental emergency management activities.

Thus, the management of "emergency response" activities which includes the emergency response assets and associated capabilities is provided by Defense Programs. The "emergency management" activities are provided by the Office of Nonproliferation and National Security. Coordination between Defense Programs and the Office of Nonproliferation and National Security takes place as required to assure the effective functioning of the Emergency Operations Centers to support radiological incidents or accidents.

All emergency response activities are not funded under one central office as the program activities are diverse along several continuums: 1) Fixed sites versus accident/incident sites involving nuclear or non-nuclear materials in weapons, terrorist devices, or in transport; 2) Program unique activities or materials that require expertise residing generally only in that program; and 3) Unique customers and requirements for different program-funded activities.

"Emergency Management" and "Emergency Response" are unique activities that have been assigned to the Office of Nonproliferation and National Security and Defense Programs, respectively. The overall breakdown and assignment of roles and responsibilities by emergency management "process" and emergency response "capability" appears to be a clear, unambiguous means to achieve the ends of efficiency and effectiveness.

SPACE POWER SYSTEMS

Mr. Myers. Please describe the status of the Pu-238 mission at Savannah River. Who is managing this effort? What is the total cost of the program by year and by appropriation account and program?

Dr. Reis. Pu-238 for the Cassini mission to Saturn is presently being processed at the Savannah River Site. The Pu-238 processing for Cassini should be complete in June 1995. Afterward, Pu-238 remaining in the U.S. inventory will begin to be processed to assure suitability for use on future NASA and national security programs. This processing will continue in FY 1995 through FY 1996.

The Pu-238 processing is conducted at the HBline at the Savannah River Site and is managed by the Savannah River Operations Office in response to requirements provided by the Department's Office of Nuclear Energy.

In FY 1994 and FY 1995, funding for the operation of this facility was provided by the Offices of Nuclear Energy and Defense Programs. Since the Savannah River facility was transferred to Environmental Management, funding in FY 1996 will be provided by the Offices of Nuclear Energy and Environmental Management. The total cost of operating this facility is as follows:

Pu-238 Processing Funding at Savannah River
(Millions of Dollars)

	FY 1994	FY 1995	FY 1996 Request
Office of Nuclear Energy	14.0	13.3	9.1
Defense Programs	21.0	25.5	0.0
Environmental Management	0.0	0.0	25.9

SAVANNAH RIVER SITE

Mr. Myers. Describe the Savannah River Site program activities including funding, federal FTEs, and contractor employees supported by Defense Programs.

Dr. Reis. The Savannah River Site program activities supported by Defense Programs cover the operation of the tritium reservoir recycle facilities in support of the active nuclear weapons stockpile, including the tritium activities which are being transferred from the Mound Plant in Dayton, Ohio, to Savannah River Site as part of the Non-Nuclear Reconfiguration Program.

Defense Programs tritium operations at the Savannah River Site utilize 10 Federal FTEs and 1,459 contractor staff.

I would like to insert in the record, a table showing the funding for fiscal years 1995* and 1996. The information follows:

FUNDING PROFILE
(BA in Millions of Dollars)

	FY95*	FY96
Core Stockpile Management:		
Operating	$104.1	$110.8
Capital Equipment	0	1.5
Non-Nuclear Reconfiguration		
Operating	4.9	5.9
Line Item	13.1	13.3
Radiological/Nuclear Accident Response		
Operating	.2	.2
Materials Surveillance & Technical Support		
Operating	4.0	4.0
Total Stockpile Management	$ 126.3	$ 135.7
Stockpile Stewardship	2.5	.8
Weapons Program Direction	4.2	0
Total Defense Programs	$ 133.0	$ 136.5

*Note: Funding for Savannah River Sites is only data for Savannah River tritium facilities, since all other facilities have been transferred to the Office of Environmental Management (EM). Even though funding for these facilities prior to FY 1996 has been appropriated to DP, not EM, this answer is consistent with DP's FY 1996 Congressional Budget Request, which was developed on a comparable basis. Therefore, the funding for the remainder of the Savannah River site would be reflected in EM's budget request.

WEAPONS ACTIVITIES

Mr. Myers. Why does Defense Programs support a Los Alamos Area Office and Kirtland Area Office when the Albuquerque Operations Office is located nearby?

Dr. Reis. The role of the Area Offices and the Albuquerque Operations Office are much different. The Albuquerque Operations Office responsibilities include:

> the integration of DOE-HQ policy and definition of Albuquerque-specific "Corporate" policy and requirements;
>
> management of Albuquerque corporate resource planning and integration;
>
> prioritization and integration of weapons complex requirements;
>
> evaluation of Management and Operating Contractor's performance and compliance with DOE policy and requirements; make fee determinations; and
>
> provide program management, technical expertise, direction, and oversight of contractors in functional areas where Albuquerque retains primary responsibilities for on-site implementation.

At the Area Offices, a total staffing level of 100 full time equivalents is authorized to maintain Federal presence and to provide oversight in the environmental, safety, and health functional area at our laboratory facilities. Principal functions include:

> administration of the Management and Operating contract, "Monitor, evaluate, and report on contractor's performance;"
>
> ensure environmental, safety, and health compliance; protection of the public, employees, and property; and maintain an emergency response capability;
>
> serve as the focal point for disseminating guidance to the contractor;
>
> assessments of the contractor's budget preparation, execution process, and funding priorities;
>
> act as the DOE spokesperson at the site; and
>
> coordinate with the stakeholders and site specific advisory boards.

ENVIRONMENT, SAFETY, AND HEALTH

Mr. Myers. Why does Defense Programs maintain its own offices of ES&H, safeguards and security, emergency operations and nuclear safety, when the Department has central offices for each of these activities?

Dr. Reis. Within the Department, the Offices of Environment, Safety and Health (ES&H), Safeguards and Security (S&S), and Emergency Management develop and issue policy for line management implementation and they conduct independent oversight of this implementation relative to their respective areas. The line program offices, such as Defense Programs, are responsible for funding, program management, and providing technical direction/assistance, and ensuring that the requirements of these important areas are effectively implemented at their respective facilities/sites. Basically, Defense Programs is the Headquarters' line management element responsible for the safe and secure operation of its facilities/assets.

Consistent with its Secretarial mandated responsibilities, Defense Programs has developed modest offices of dedicated technical experts that provide matrix support and direction to the field and other elements of Defense Programs in the areas of ES&H, S&S, nuclear safety and emergency management. This consolidation of support functions within Defense Programs assures consistency, standardization, effective integration, and cost-effective compliance and performance to Departmental policy requirements. It also avoids redundancy, helps assure an effective line of communications, and provides a "checks and balance" between policy development and program direction/implementation.

Without the above offices of staffed technical experts, Defense Programs would not be able to accomplish its line management responsibilities. This is of particular concern since Defense Programs continues to hold large quantities of nuclear material and generates hazardous and radioactive wastes associated with its ongoing mission. In summary, the consolidation within Defense Programs of technical experts is consistent with prudent management principles and critical to the maintenance of safe and secure Defense Programs facilities/assets.

Mr. Myers. How much funding was provided for environment, safety and health activities at defense laboratories and facilities in fiscal years 1994, 1995 and 1996? Do you expect these costs to continue to increase? Can you provide an estimate of how much funding Defense Programs has provided for these activities since 1990?

Dr. Reis. Funding estimates for Defense Programs' (DP) laboratories and facilities for Environment, Safety and Health activities for fiscal years 1990 through 1996 are reflected in the attached table.

It should be noted that funding for the Mound, Pinellas and Rocky Flats Plants; Fernald Feed Materials Production Center; Oak Ridge Associated Universities and the Idaho, Richland and Savannah River Sites has been **EXCLUDED** from this data (except for Savannah River tritium facilities and Weapons Activities at the Pacific Northwest Laboratory), since these facilities have been transferred or are in the process of being transferred to the Office of Environmental Management (EM). Even though funding for these facilities prior to FY 1996 has been appropriated to DP, not EM, this answer is consistent with DP's FY 1996 Congressional Budget Request, which was developed on a comparable basis. Therefore, funding for DP facilities transferring to EM would be reflected in EM's budget request.

There have also been some internal DP budget structure changes in the FY 1996 Congressional Request, which are not reflected in the Department's Environment, Safety and Health Management Plan database. For example, the former Materials Support program activities remaining in DP have been included in the Stockpile Management Decision Unit in FY 1996. Further, in FY 1996 "Weapons Research and Development" and "Weapons Testing" are eliminated as decision units. Within these former decision units, Emergency Response activities have been transferred to "Weapons Stockpile Management" and the remaining activities reorganized into a new decision unit "Weapons Stockpile Stewardship."

Finally, it must be noted that for the laboratories and the Nevada Test Site, these are crosscut estimates only, and as such are not directly trackable to budget formulation structures or accounting reports. These data are provided directly by field elements and are used primarily for internal program management and prioritization.

In response to whether these costs will continue to increase. DP expects ES&H costs for fiscal years 1996 through 2000 to remain relatively constant. However, the Department is currently considering three major actions that will affect the Nation's Nuclear Weapons Complex (Complex) and ultimately these ES&H costs estimates..

The first action is a proposal to provide tritium supply and recycling facilities for the Complex. Currently, there is no capability to produce tritium within the Complex. Tritium, with a half-life of 12.3 years, is necessary for all weapons that remain in the Nuclear Weapons Stockpile. Thus, tritium must be replaced periodically as long as the Nation relies on a nuclear deterrent. Current projections require that a new source of tritium be available by 2009 and new tritium be available for stockpile use by 2011. The Department is pursuing a Tritium Supply and Recycling Programmatic Environmental Impact Statement (PEIS) that will evaluate the siting, construction, and operation of tritium supply technology alternatives and recycling facilities.

The second action is a proposal to address the research and development programs necessary for assuring the safety, security, and reliability of the enduring nuclear weapons stockpile, as well as the capability to respond in a timely and cost-effective manner to any new or unforeseen threat to the Nation's security. Once formulated, the Stockpile Stewardship and Management Proposal will be analyzed in a PEIS to be initiated in 1995.

The third action is a proposal to address the storage of all weapons-usable fissile materials, primarily highly enriched uranium and plutonium. In 1994, the Department established a separate office to address not only the storage but the disposition of excess weapons-usable fissile material. As a result of this, a third PEIS, The Storage and Disposition of Weapons-Usable Fissile Materials PEIS, is being prepared to analyze alternatives for the long-term storage of all weapons-usable fissile materials, primarily highly enriched uranium and plutonium. This PEIS will also address the disposition of materials declared surplus to national defense needs by the President.

When the Department executes initiatives to implement these actions, ES&H costs could increase to ensure these initiatives comply with current Federal, State and local laws and regulations. The funding estimates reflected in the table for FY 1990-FY 1996, which I would like to provide for the record, have not been completely analyzed for the impacts of these three actions on ES&H costs. The information follows:

DEFENSE PROGRAMS ES&H FUNDING
(in thousands of dollars)

	FY 1990	FY 1991	FY 1992	FY 1993	FY 1994	FY 1995	FY 1996
ALBUQUERQUE:							
Operations Office	$12,461	$11,626	$11,437	$6,400	$29,551	$31,523	$40,266
LANL	27,466	22,501	78,515	124,364	59,698	64,713	74,300
SNL	19,769	58,326	35,674	66,130	38,493	30,421	33,263
Kansas City Plant	15,823	17,966	9,300	17,675	26,646	17,735	18,783
Pantex Plant	29,572	33,079	24,815	23,976	31,960	35,933	48,004
TOTAL, ALBUQUERQUE	105,091	143,498	159,741	238,545	186,348	180,325	214,616
CHICAGO:							
Operations Office	0	0	0	20	0	0	0
ANL	113	140	1,226	240	0	0	0
BNL	0	191	985	0	0	0	0
TOTAL, Chicago	113	331	2,211	260	0	0	0
HEADQUARTERS:	0	0	1,210	37,000	47,900	42,900	42,900
NEVADA:							
Operations Office	0	0	0	8,491	11,041	16,694	15,217
Nevada Test Site	72,287	71,668	86,115	52,160	52,900	55,336	54,446
TOTAL, NEVADA	72,287	71,668	86,115	60,651	63,941	72,030	69,662
OAKLAND:							
Operations Office	0	0	0	3,584	3,430	3,226	3,491
LLNL	32,379	32,874	36,623	63,297	38,529	42,733	43,596
SNL/Livermore	0	0	0	0	4,855	5,002	5,152
TOTAL, OAKLAND	32,379	32,874	36,623	66,881	46,813	50,960	52,238
OAK RIDGE							
Operations Office	0	0	0	3,202	2,191	2,214	2,892
ORNL	331	2,912	4,959	1,460	1,190	1,084	1,058
Y-12	82,566	102,510	118,985	114,137	63,736	65,478	81,867
TOTAL, OAK RIDGE	82,897	105,422	123,944	118,799	67,117	68,776	85,818
RICHLAND:							
PNL	65	800	0	0	0	0	0
SAVANNAH RIVER SITE, Tritium Facilities	5,290	13,556	15,042	14,128	35,124	33,349	32,356
TOTAL, DEFENSE PROGRAMS	$298,122	$368,149	$424,886	$536,264	$447,243	$448,341	$497,590

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WEAPONS ACTIVITIES

Mr. Myers. What is the current status of the latest NWSM?

Dr. Smith. The most recent NWSM is at the Department of Energy for their internal coordination.

KMS STATUS

Mr. Myers. What is the status of the close-out of the KMS contract? Describe the remaining issues to be resolved. Is there still a pending lawsuit? If so, please describe.

Dr. Reis. Pursuant to the negotiated "Settlement Agreement" with KMS, dated November 10, 1993, DOE paid KMS $2.2 million and assumed custody of the KMS Ann Arbor facility on January 14, 1994, including all of the government-owned property and equipment therein. DOE subsequently removed all of the equipment and completed the facility clean-up decontamination and decommissioning (D&D) activities necessary to return the building to the landlord for unrestricted use. Thus all facility and property-related issues under KMS Contract DE-AC03-87DP10560 have been resolved. Final administrative close-out of the KMS contract requires resolution of audited and allowable costs incurred by KMS under the contract. This is still an open issue and the subject of a second KMS lawsuit filed January 7, 1995, seeking approximately $3.2 million.

KMS has filed two legal actions in the U. S. Court of Federal Claims against DOE. These actions can be described as follows:

(a) KMS claim filed September 9, 1994 seeking some $15.4 million in alleged damages for:

- unreimbursed costs for services provided by KMS during 1992 and 1993,
- loss of profit on the close-out work which KMS was not allowed to perform, and
- loss of investment in other business lines (disposed of by KMS)

(b) KMS action filed January 7, 1995, seeking some $3.2 million in alleged damages for unreimbursed costs under the contract from May of 1987 through December 31, 1991.

KMS' January 7, 1995, action relating to costs under the contract is a direct subject of the contract and clearly must be resolved before the contract can be finally closed out. On the other hand, it has been DOE's position that the contract expired on December 31, 1991. The specific issues raised in KMS' September 9, 1994, action refer to a period of time following that expiration date and, therefore, do not fall under the auspices of the contract.

Nonetheless, final administrative closeout of the contract with KMS may well be contingent upon resolution of the issues under the September 9, 1994, breach of contract action - especially since contract closeout involves the Government obtaining a release of liability from the contractor, and it is doubtful that KMS would agree to such a release while pursuing any litigation against DOE.

The Department of Justice, in coordination with DOE/HQ Office of General Counsel and the DOE Oakland Operations Office General Law Division, is handling the Government's response to these KMS legal actions.

RUSSIAN NUCLEAR WEAPONS LABS

Mr. Myers. Mr. Baker, can you describe the state of the Russian nuclear weapons laboratories?

Mr. Baker. The Russian nuclear weapons laboratories are subject to many of the same stresses afflicting other formerly-privileged elements of Russian society: confusion over mission and functions; deep funding cuts; disruption of pay and services; and reduction in personnel. The Russian labs no longer represent attractive employment options for bright young Russian scientists and are "greying" at a rate which is alarming to senior laboratory management. (UNCLASSIFIED)

DELETED

NONPROLIFERATION AND ARMS CONTROL

Mr. Myers. How concerned should we be about the possible diversion of Russian nuclear weapons scientists to other countries? What is being done to mitigate the danger?

Mr. Baker. We are acutely aware of the proliferation danger inherent in the current situation where a large and underutilized nuclear community is under extreme economic duress. We have three kinds of programs to alleviate the problem. Science and Technology Centers in Russia and Ukraine are supported by the United States and other countries to fund non-weapons research by former weapons scientists; DOE's Industrial Partnering Program supports the engagement of former weapons scientists in commercially marketable activities; and an active lab-to-lab research program permits cooperation between U.S. scientists and their Russian counterparts in non-weapons-related scientific activities.

At present, we have no confirmed reports of Russian nuclear weapons scientists assisting "rogue" states' weapons development programs. Reported instances of Russian cooperation or sale of purported designs, etc., to such countries have been determined to be scams. We continue to aggressively track each such report to determine its authenticity.

MATERIALS PROTECTION, CONTROL AND ACCOUNTING

Mr. Myers. Describe the new initiative with Russia for Materials Protection, Control and Accounting. What is the cost of this effort in fiscal year 1996 and what is the estimated total cost of the effort? What will be the Russian contribution to the program cost? Are other federal agencies contributing funds to this effort?

Mr. Baker. The objective of the Materials Protection, Control and Accounting (MPC&A) program is to help Russia strengthen the security of its nuclear material, particularly direct-use materials such as high enriched uranium and plutonium. The MPC&A program is aimed at accomplishing the following goals: Improving MPC&A at high priority Russian facilities with weapons-usable nuclear materials; deploying technology by fostering collaboration among U.S. and Russian specialists, and by modernizing the indigenous Russian infrastructure for producing, operating and maintaining MPC&A systems; and instituting national standards and systems in Russia, through the provision of technical resources (training, equipment, procedures, standards, and guides) for establishing and maintaining an effective and standardized regulatory program.

The Department of Energy (DOE) has requested a $70 million budget for FY 1996 for MPC&A cooperation with Russia. The $70 million has been requested for three initiatives: $40 million for the laboratory-to-laboratory program; $20 million for expanding government-to-government cooperation; and $10 million for cooperation with Gosatomnadzor (GAN), the Russian national regulatory authority. At present, a preliminary estimated cost of the MPC&A program through FY 2002 is $400 million. The estimated costs are shown in a table which I would like to insert in the record. The information follows:

FY	Amount
1996	$70M
1997	$70M
1998	$70M
1999	$70M
2000	$50M
2001	$50M
2002	$20M
TOTAL	$400M

In arriving at this funding profile, the following factors were considered: The number of sites in Russia that contain weapon-usable nuclear materials and that require MPC&A upgrades; the kinds of activities carried out under the MPC&A program to strengthen MPC&A practices; the costs of the activities; and the overall program strategy, which is to serve as a catalyst for indigenous Russian MPC&A efforts. This program is not designed to provide a U.S. solution to every MPC&A need in Russia. Rather, the strategy is to work cooperatively with the Russians to implement high priority MPC&A technologies, methods, and capabilities so that, as the program winds down in the out-years, the Russians can continue the work on their own.

The precise details of the program, particularly in the out-years, are dependent on information that is still uncertain, such as the specific facilities that will be addressed in each fiscal year.

The U.S. MPC&A program is intended only as a catalyst for Russian efforts to improve the security of its nuclear materials. It is not possible at this time to determine what the ultimate level of the Russian contribution will be. However, recent reports indicate that the Russian government at high levels has come to view MPC&A as a high priority and are attempting to allocate funds for this purpose and to protect these funds. The projected total cost of the MPC&A program will depend on political and other factors in Russia.

The Department of Defense, through its Cooperative Threat Reduction program, has allocated $45 million in Nunn-Lugar funds to MPC&A cooperation with Russia. The funding and responsibility for government-to-government MPC&A cooperation with Russia will be transferred to DOE after FY 1995. Some of the funds transferred from the Department of Defense will be used by the Nuclear Regulatory Commission (NRC) for cooperation on regulatory issues. The NRC has also allocated approximately $350,000 in Agency for International Development funding under the Lisbon Protocol for regulatory assistance to Russia.

Mr. Myers. What is the nature of the U.S. participation in this proposed program--cash, equipment, support to U.S. industry to provide services and equipment?

Mr. Baker. The $70 million requested for MPC&A cooperation with the FSU in FY 1996 funding includes three components: equipment to be installed and used in Russian facilities (approximately $23 million); contracts with Russian institutes and organizations to produce specific deliverables needed to strengthen MPC&A at facilities to support the deployment of MPC&A technology, or to support MPC&A national standards and systems (approximately $10 million based on the laboratory-to-laboratory integrated action plan); and funding for U.S. expertise at the DOE national laboratories and operating sites (approximately $37 million). These breakouts are at present preliminary. The equipment cost is likely to rise as new information and work are factored into the 1996 plan. Equipment under the aegis of the Nunn-Lugar Act is procured through full and open competition with the intent of drawing on U.S. technology and expertise in U.S. cooperation with Russia. Foreign--including Russian and joint venture--vendors can also compete for supply contracts. In some cases, Russian equipment may be used in order to reduce the cost of making the immediate improvements, and to facilitate long-term maintenance of equipment in Russia.

ACTIVITIES WITH RUSSIA OR STATES OF THE FORMER SOVIET UNION

Mr. Myers. By program, what is the total amount of DOE funding for assistance to Russia and former states of the Soviet Union in fiscal years 1994, 1995, and 1996?

Mr. Baker. I would like to submit a table for the record which provides funding information for DOE activities with Russia or states of the former Soviet Union. The individual program descriptions are also provided. The information follows:

ACTIVITIES WITH RUSSIA OR STATES OF THE FORMER SOVIET UNION
(Dollars in Millions)

		FY 94		FY 95		FY 96
Energy Supply R&D						
Soviet-Designed Reactor Safety Program		0.0	*	89.6	*	78.8
Russian Replacement Power Initiative		0.0		0.0		5.0
Nuclear Technology R&D		0.0		5.0		5.1
Environment, Safety & Health		2.0		3.7		6.8
Biological & Environmental Research		0.2		0.1		0.1
Fusion Research		0.9		0.8		0.8
Uranium Supply & Enrichment		3.2		7.3		7.2
General Science & Research						
High Energy Physics		0.0		0.2		0.4
Departmental Administration		0.1		0.2		0.3
Defense Environmental Rest. & Waste Mgmt.						
Technology Development		0.3		0.7		0.2
Other Defense Activities						
Arms Control		9.7		21.2		94.7
Energy Conservation						
Technical & Financial Assistance		0.0		0.0		0.1
Total Funding	16.4	128.8		199.5		

* - Non-DOE funds. $30M received from AID on the last day of FY 94 will be used in FY 95.

Soviet-Designed Reactor Safety Program - Continue DOE's effort to reduce risk of accident from nuclear reactors, primarily in Russia and Ukraine, by infusing them with Western hardware and safety standards. Program focuses on management and operational safety efforts; plant safety evaluation efforts; engineering and technology activities; fuel cycle safety work; legislative and regulatory framework support; resolution of technical and socio-economic issues delaying Chernobyl shut down; and safety efforts in other Former Soviet Union states.

Russian Replacement Power Initiative - Enable Russia to shut down plutonium production reactors by helping it select an alternative power source and find international financing to provide for it.

Nuclear Technology R&D - Conduct R&D to advance the current state of safety technology to the next generation, especially for Soviet-designed reactors.

Environment, Safety & Health - Conduct studies of radiation exposure outside the Chernobyl area. Program supports G-7 working group initiative and 1994 Bi-national Agreement with the Russian Federation.

Biological and Environmental Research - Supports twenty small grants at $5,000 each to highly skilled Russian research teams primarily at Institutes in Moscow, St. Petersburg, and Novasibirsk dealing with molecular genetics, cellular biology, and biophysics. Active collaborations have also been established with DOE's human genome program at Argonne National Laboratory, Los Alamos National Laboratory, Lawrence Livermore National Laboratory, and Oak Ridge National Laboratory.

Fusion Energy - Provides support to Russian Federation scientists working in the United States, U.S. scientists working in the Russian Federation, and subcontracts with the Russian Federation.

Uranium Supply & Enrichment Activities - Monitor Russian uranium to ensure that low enriched uranium purchased from Russia by the U.S. is derived from highly enriched uranium taken from dismantled weapons.

High Energy Physics - Procure special magnets for DOE's B-factory being built at the Stanford Linear Accelerator Center. This effort is part of a scientific collaboration with Soviet scientists who are helping to design the magnets. Funding primarily pays for magnet materials.

Departmental Administration - Oversee DOE efforts to promote defense conversion and stabilization of the Newly Independent States and improve coordination on all DOE research and development and technology transfer programs with the Department of State and the U.S. Embassy in Moscow.

Technology Development - Identify and access Russian technologies, technical information and scientific research relating to environmental management.

Arms Control - Provide for initiatives to develop a national system of nuclear materials protection, control and accounting (MPC&A) systems and a national MPC&A training center, and to improve the current MPC&A systems at many Russian sites; conduct an Industrial Partnering Program to redirect the activities of scientists and engineers from the Newly Independent States (NIS) to nonmilitary scientific and commercial R&D, provide business education and assistance to the commercial R&D projects, and support a partnership between DOE laboratories and NIS institutes to increase U.S. industry investment in the NIS; provide assistance to Former Soviet Union states to effectively control nuclear exports; establish transparent and irreversible nuclear reductions; provide additional funds in Negotiations & Analysis for "Secure Former Soviet Union Nuclear Materials and Expertise"; shut down production reactors; and provide technical means to reduce the uranium enrichment used in research and test reactor fuels.

Technical and Financial Assistance - Assist the training of energy decision makers; identify market opportunities; assist U.S. energy efficiency firms export products and services; and provide information on U.S. sustainable market development technologies to local entities through coordinated U.S. databases.

WEAPONS ACTIVITIES

Mr. Myers. We hear much about the danger of terrorists gaining access to nuclear weapons or nuclear materials. Aren't chemical and biological weapons equally dangerous and even more readily available to terrorists groups? How is this type of threat being handled?

Dr. Smith. Chemical and biological weapons have long been recognized as relatively inexpensive weapons of mass destruction, primarily because they can be fabricated from components which are more readily available than fissile nuclear material. The DoD has several programs to address this threat. These options range from restricting access to chemical agent precursors and unique production equipment to active counterproliferation measures -- with the capability to detect, locate, and disarm chemical and biological weapons hidden by terrorist groups.

REDUCED ENRICHMENT RESEARCH AND TEST REACTOR PROGRAM

Mr. Myers. Please describe the activities of the Reduced Enrichment Research and Test Reactor (RERTR) program. Include a breakout of operating and capital equipment funding by specific task for fiscal years 1994, 1995, and 1996. What amount of funding pertains to the new program initiative with Russia and China?

Mr. Baker. The main objective of the RERTR program is to provide the technical means to reduce the enrichment of uranium contained in research reactor fuels and other research reactor devices to significantly less than the 90 to 93 percent enrichment currently used, and thereby to reduce the nuclear weapons proliferation potential of such fuels and devices.

The program activities are divided in three tasks:

First, program management, to provide management and coordination functions.

Second, analysis activities, to study and evaluate the major types of research and test reactors with reduced enrichment fuels, expedite application of reduced-enrichment replacement fuel in specific foreign and domestic reactors, provide the Executive Branch with technical/economic evaluations of requests for significant highly-enriched uranium (HEU) exports, and support DOE in preparing the Environmental Impact Statement for the return of spent foreign research reactor fuel.

Third, fuel activities, to develop, demonstrate, and commercialize advanced low enriched uranium (LEU) fuels. In recent years, these activities have focused on the resolution of residual questions related to fuels previously developed by the RERTR program and on the development of alternative processes, based on LEU, to produce fission Mo-99 for medical applications.

Major FY 1994 analytical activities included studies to determine the feasibility of using LEU fuel in the Advanced Neutron Source reactor that was under design at the Oak Ridge National Laboratory (ORNL) and in the SAFARI-1 reactor in South Africa. Important new activities in FY 1995 concern the beginning of the Russian RERTR program, possible initiation of a Chinese RERTR program, and preparations for the resumption of an advanced fuel development program.

The breakout for the Department of Energy planned and actual budgets and spending for the RERTR program for FY 1994, FY 1995, and FY 1996 is shown in a table which I would like to insert in the record. The information follows:

BREAKOUT OF RERTR FUNDING
(thousands of dollars)

	FY 1994	FY 1995	FY 1996
Breakout of Operating Funds	Actual[a]	Planned[a]	Planned
Program Management	400	400	400
Analyses	1,300	800	700
Analyses of FSU Reactors		500	600
Fuel Activities			
U.S. RERTR Program (Residual)	300	300	100
Development of Moly-99 Targets	800	854	900
Russian RERTR		500	600
Advanced Fuel Development		0[b]	184[c]
Sub Total, Fuel Activities	1,100	1,654	1,784
Total	$2,800	$3,354	$3,484
(Total including Anticipated Additional Funding)		(4,854)	(5,484)
Capital Equipment Funds	0	0	300[d]

[a] Funds appropriated for the RERTR Program have been augmented from Nuclear Nonproliferation Policy to meet program requirements.
[b] The State Department is in the process of transferring $1,500,000 to DOE from the Nonproliferation and Disarmament Fund for advanced fuel development work with Russia and China.
[c] The Office of Nuclear Energy will provide an additional $2,000,000 from funds requested in the FY96 budget for advanced fuel development under the RERTR program.
[d] Equipment required to initiate advanced fuel development program.

No equipment funding was provided in FY 1994 and FY 1995. Equipment funding of $300K will be needed in FY 1996 to resume fuel development.

The cost of the initiative with China is not yet completely known since the first U.S.- China discussions on RERTR are being planned for this spring. If an agreement for cooperation can be concluded, the costs for initiating the Chinese program will be borne by other program activities for this first year. The program with China will be a cooperative one, where U.S. costs will be for analytical work and advanced fuel development to be performed to support the Chinese LEU conversion program.

Mr. Myers. Describe the program for development of low enriched uranium targets for medical isotope production. What is the total cost of that effort?

Mr. Baker. The technology for using low-enriched uranium (LEU<20 percent) instead of highly-enriched uranium (HEU-93 percent) in targets for the production of fission product molybdenum-99 for medical applications is being developed in cooperation with universities and commercial producers. The technical issues that need to be addressed are: development of LEU target fabrication technology; development of chemical process technology for recovery and purification of the Mo-99 produced in LEU targets; adaptation or development of technology for disposing of radioactive waste; and obtaining FDA approval to market the drug product produced using LEU instead of HEU. The ongoing program is performed in collaboration with the University of Illinois, the Indonesian National Atomic Energy Agency (BATAN), and the Argentine National Atomic Energy Commission (CNEA). Total cost of this activity is estimated at $4.5 million, spread over five years.

Mr. Myers. What is the potential program with South Africa and China?

Mr. Baker. A joint study of the technical feasibility of converting the South African SAFARI-1 reactor from the use of highly-enriched uranium to the use of low-enriched uranium was performed during FY 1994 and during the beginning of FY 1995. The South African scientist who visited Argonne during the study is now back in South Africa, and a joint report is being reviewed by the South African Atomic Energy Corporation with a goal of completing the review during March 1995. Another study is simultaneously under way in South Africa, based on the results of the technical report, to assess the economic feasibility of converting the reactor to LEU fuel.

South African laboratories produce Mo-99 from HEU targets, and have the equipment, expertise, and motivation to be effective partners for the RERTR program in the development of an LEU-based process to produce Mo-99. They have expressed interest in such cooperation but, as their organization is run on a commercial basis, would require U.S. funding. Three irradiations are envisioned, one to low burnup and two to prototypic burnup to demonstrate the process. Argonne would provide the targets and the dissolver, and would assist the South Africans in performing the analyses needed for the irradiation and chemical processing. First year funding for this activity is estimated at $300,000, which is not included in the answers to questions 44 and 45.

Collaboration with the Peoples Republic of China in RERTR activities is very desirable because it would be instrumental in converting China's research reactors that use HEU fuels. China has also exported HEU reactors and fuels to Iran, Pakistan, and Ghana in the 1990s. Converting Chinese reactors would reduce the amount of HEU circulating in China and around the globe. Chinese laboratories have repeatedly expressed their interest in cooperating with the RERTR program, and a Statement of Intent outlining the main features of a RERTR cooperation agreement was signed in February 1995 by the Secretary of Energy, Hazel O'Leary, and by the President of the China Atomic Energy Authority. A visit to China to discuss cooperation on a Chinese RERTR program is being planned for May or June 1995.

Mr. Myers. Please describe the proposed RERTR program with Russia. How many Russian research reactors are there? What is the total cost of the proposed program? What will be the Russian contribution to the program cost? What is the nature of the U.S. contribution to this program--services, equipment, materials?

Mr. Baker. The Former Soviet Union (FSU) supplied highly-enriched uranium (HEU) to fuel research and test reactors in the FSU, Eastern Europe, Libya, North Korea, and Vietnam. Conversion of these reactors from fuels containing weapons-usable uranium to low-enriched uranium (LEU) fuels similar to those developed by the RERTR program would reduce the risk of nuclear proliferation by reducing the amount of Russian-origin HEU in circulation. Availability of low-enriched research reactor fuel could be instrumental in eliminating HEU exports from Russia. In addition, this activity would provide challenging research projects for a number of FSU scientists formerly engaged in weapons-related activities.

The Russian-designed research reactors use fuel geometries and fuel production methods which differ significantly from those of research reactors designed in the West. New LEU fuel materials and fuel assembly designs need to be developed. A comprehensive plan has been prepared, which will utilize the resources of several Russian laboratories to develop new LEU fuels suitable for the conversion of all 26 research reactors of Russian design which are currently in operation with HEU. This activity will result, at the end of five years, in the development of fuels adequate for the conversion of the 13 HEU reactors exported by the FSU, and in the testing of the new LEU fuels in the conversion of two demonstration reactors. Development of more advanced fuels suitable for the conversion of all the other HEU research reactors remaining in Russia will also be pursued, but will take longer. The U.S. contribution to this program is meant to provide a portion of the effort, services, and materials, but currently no equipment. Very important contributions will derive from the technical interaction between U.S. and Russian scientists on safety issues, and from the exchange of information between the U.S. and Russian fuel development efforts. The funds requested and utilized for advanced fuel development in FY 1995 and FY 1996 will have a direct bearing on the ability to develop LEU fuels for remaining HEU research reactors in Russia.

A contract between Argonne National Laboratory and the Russian Research and Development Institute of Power Engineering was recently signed to implement the first year of work on this plan. The total cost of the first year of the collaboration is estimated at $3,515,000, of which $450,000 will be provided by the U.S. Government to the Russian participants for deliverables received, and $3,065,000 will be provided by the Russian Government. To date, the Russian Ministry of Atomic Energy (Minatom) reports that it has funded over $1 million to this joint cooperative effort. The costs for future years are still to be negotiated, but are expected to be similar.

FUNDING FOR NORTH KOREA AGREEMENT

Mr. Myers. What funding is included in the budget for support of the North Korean agreement in fiscal year 1996?

Mr. Baker. Fifteen million dollars in the Office of Arms Control and Nonproliferation International Security line item is designated for " . . . international security commitments of the Administration in the . . . Democratic Peoples Republic of Korea." The entire $15 million could be used for activities in North Korea. We anticipate that only approximately $5 million will be required to complete follow-on activities related to the storage pool water treatment and stabilization and canning and storage of the spent fuel from the 5 megawatt nuclear reactor.

PROGRAM DIRECTION FUNDING

Mr. Myers. Please provide an object class breakout of all program direction funding requested in this program for fiscal years 1994, 1995, and 1996.

Mr. Baker. An object class breakout of all program direction funding requested for the Office of Arms Control and Nonproliferation for fiscal years 1994, 1995, and 1996 is shown in a table which I would like to insert in the record. The information follows:

	(dollars in thousands)		
Object Class	FY 94	FY 95	FY 96
Base Salaries	$2,601	$2,515	$ 2,515
Personal Services	$162	$300	$300
Personnel Benefits	$362	$607	$607
Travel	$686	$670	$670
Other	$141	$908	$908
TOTAL	$3,952	$5,000	$5,000

NONPROLIFERATION AND ARMS CONTROL

Mr. Myers. How much did Project Sapphire cost DOE and the Department of Defense?

Mr. Baker. The costs associated with the Kazakhstan HEU purchase, otherwise known as "Project Sapphire", fall under three categories.

First, a purchase agreement was signed establishing a cash price for the highly enriched uranium. It allowed a team from the United States to enter Kazakhstan, repackage the HEU, and transport the HEU to the United States. The details of the agreement are classified so as not to establish a baseline "market value" for such material. The cash payment was made from funds appropriated to the Departments of State, Defense and Energy.

Second, an assistance package is currently being negotiated to help Kazakhstan with environmental recovery and cleanup from the former Soviet nuclear program. The assistance package is expected to be a part of the Cooperative Threat Reduction Program (Nunn-Lugar) through the Department of Defense.

Third, the Department of Energy incurred $3,861,620 of incidental costs associated with the repackaging effort in Kazakhstan which are broken down as follows:

$ 3,645,620	includes: salaries, transportation, meals, and lodging for personnel during the trip to Kazakhstan; transportation of the equipment needed to repackage the HEU; and on-site support for the repackaging team (translators, and a medic).
$ 216,000	for the convoy of Safe, Secure Transports which trucked the material from Dover AFB, DE to Oak Ridge, TN.

Other costs associated with the transportation of the HEU from Kazakhstan were incurred by the Department of Defense, and I believe Dr. Smith could address those costs.

WEAPONS ACTIVITIES

Mr. Myers. How much did Project Sapphire cost DOE and DoD?

Dr. Smith. The Department of Defense will gladly oblige any Member's request for information on Project Sapphire but would prefer to do so in another forum, with the participation of the other two Departments involved (i.e. State and Energy).

PERFORMANCE MEASUREMENTS

Mr. Myers. In response to a question for the record last year, you listed several performance measurements. Please compare your performance in fiscal year 1994 to each of the measures.

Mr. Baker. The Nuclear Safeguards and Security program continues to be critical to the National Security of the United States. The effectiveness of the program over the past year to prevent theft of nuclear materials and/or nuclear weapons or nuclear weapons design information, coupled with zero penetration of nuclear facilities by terrorist groups and no fatalities as a result of terrorist attack or hostage situations is of utmost importance to the public health and safety. There were no malevolent acts which resulted in an adverse impact to the public or the environment due to failure of the Safeguards and Security system.

We fell short of the performance measurement to review approximately 650,000 documents for the declassification program in FY 1994 by about 120,000 documents. In addition, a Department of Energy (DOE) declassification review team concluded that the vast majority of approximately 1.7 million pages of documents (600 linear feet) related to nuclear testing that are stored at the National Archives and Records Administration Regional Archives at Laguna Niguel, California, could be released to the public as shown on a DOE press release to be inserted in the record. The press release is attached. This shortfall should be ameliorated with the initiation of the large-scale document review program which calls for program offices and field sites to develop a plan to systematically review their classified records for declassification. At present, 15 plans have been approved, and we anticipate approval of a significant number of additional plans in the future. This will result in a large increase in the number of documents reviewed.

We were able to accomplish 102 of the estimated 104 training courses at our Central Training Academy. We actually performed 166 iterations of the courses versus the 164 anticipated. These courses are essential to a Department-wide well-trained and competent Safeguards and Security workforce.

The performance measurement on Technology Development was referring to performing 60% of our customer needs in FY 1995. However, it is expected that we will only be able to fulfill 39% of customer needs. This 39% is the result of additional needs being identified by our customers. while at the same time we are experiencing rising labor costs and level funding.

Through cost effective policy implementation, the Department-wide safeguards and security crosscut estimates where reduced by over 11% from the estimated $976 million to the final FY 1994 estimate of $864 million.

DOE NEWS

NEWS MEDIA CONTACT:
Sam Grizzle, 202/586-5806

FOR IMMEDIATE RELEASE
August 2, 1994

DOE DECLASSIFIES MORE DOCUMENTS

A Department of Energy (DOE) declassification team has concluded that the vast majority of approximately 1.7 million pages of documents relating to nuclear testing that are stored at the National Archives and Records Administration's (NARA) Regional Archives in Laguna Niguel, Calif., are not classified.

The National Association of Atomic Veterans requested access to the documents, believing they might contain information about human radiation exposures resulting from nuclear tests conducted in the 1950s and 1960s. As a result of the veteran's request, the NARA asked DOE to review the documents. A team of experts, consisting of three people from DOE's Office of Declassification, Washington, D.C., and the classification officer from DOE's Oakland Operations Office surveyed the documents during a two-day visit, July 7-8.

As a result of the declassification survey, approximately 93 percent of the documents are now available for public research. The remaining records must be temporarily withheld pending further declassification review or screening for personal privacy restrictions under the Freedom of Information Act.

Anyone wishing to conduct research on these files should contact Ms. Diane S. Nixon, Director, National Archives and Records Administration, Pacific Southwest Region, 24000 Avila Road, Laguna Niguel, Calif. 926575, or telephone her at 714/643-4241.

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NUCLEAR SAFEGUARDS AND SECURITY

Mr. Myers. What is the most likely threat to DOE facilities, and what is the least likely threat?

Mr. Baker. In our estimation the most likely physical threat to DOE facilities is facility sabotage by disgruntled employees, i.e the "insider threat" closely followed by non-violent civil disobedience perpetrated by demonstrators. The least likely physical threat is a full-scale standoff attack by terrorists or other organized criminal entities to seize material, create a hostage/barricade situation or destroy sensitive production/research assets. It should be noted that economic/technological theft by foreign governments/corporations etc. is the greatest potential overall threat to DOE interests.

DECLASSIFICATION

Mr. Myers. Please describe the current effort to declassify information including the funding for each year and milestones.

Mr. Baker. A description of the current effort to declassify information including the funding for each year with milestones is shown in a table to be inserted in the record. The information follows:

DECLASSIFICATION OF INFORMATION FUNDING AND MILESTONES

	FY 1994	FY 1995	FY 1996
	(Dollars in Thousands)		
Perform a fundamental review of classification policies and practices to determine that information which requires continued protection because of national security, treaty obligations, or nonproliferation concerns.	$2,770	$3,130	$3,850
Milestones: Completion of fundamental review - 4/96			
Accelerate the review of documents requested under statute (e.g., FOIA) or Executive order to identify classified and controlled information by hiring, training, and certifying additional document reviewers. Provide dedicated support to the National Archives for the systematic review program of DOE historical documents.	$2,025	$2,641	$3,441
Milestones: Increase number of full-time reviewers at the Archives from 5 to 6 - 7/95 Reduce the 18-month backlog of FOIA requests to 3 months - 10/96			
Train and certify additional document declassifiers required to accelerate the review of documents for declassification.	$ 945	$ 710	$ 890
Milestones: Increase number of document declassifiers by 50% to 300 - 9/95 Increase number of document declassifiers to 400 - 9/96			

	FY 1994	FY 1995	FY 1996
	(Dollars in Thousands)		
Develop state-of-the-art automation technology to accelerate the document declassification process and enhance the development and issuance of revised classification/control guidance. Milestones: Initial operation capability of internal Local Area Network - 6/95 Produce the first prototype version of the Advanced Classification Guidance System - 9/95	$1,630	$1,240	$1,340
Work will continue on the Declassification Productivity Initiative. Due to initiation of this project in mid-FY 1995, additional funding was not identified for FY 1996. Milestones: Complete evaluation of recommendations on Optical Character Recognition equipment and Enhancements - 9/95 Test and evaluate the short-term redaction system - 10/95 Complete study of declassification process - 1/96 This development is estimated to require 5 years of effort at the FY 1995 funding level.	$ 0	$3,000	$ 0

Mr. Myers. In fiscal years 1993 and 1994, how many pages were classified and how many declassified by the Department of Energy?

Mr. Baker. In FY 1993, the Department of Energy classified 1,094,250 pages, which is a significant reduction of 42 percent from the 1,896,090 pages classified in FY 1992. However, the Department did not collect data on how many pages were declassified in FY 1993. In FY 1994, 1,126,130 pages were classified and 285,000 pages were declassified. In addition, a declassification review team concluded that the vast majority of approximately 1.7 million pages of documents (600 linear feet) relating to nuclear testing that are stored at the National Archives and Records Administration Regional Center at Laguna Niguel, California, could be released to the public.

GUARD OVERTIME COSTS

Mr. Myers. There have been reports of excessive overtime costs for guards at several facilities. Have overtime costs for guards at DOE facilities decreased in fiscal years 1994 and 1995?

Mr. Baker. Yes, the overtime costs have decreased. In FY 1994, guard overtime costs were reduced by $2.2 million, and in FY 1995, there has been an additional $863 thousand reduction.

REDUCING DEPARTMENT-WIDE SAFEGUARDS AND SECURITY COSTS

Mr. Myers. Describe the actions taken to date to reduce Department-wide safeguards and security costs.

Mr. Baker. Actions taken to reduce safeguards and security costs include consolidation of special nuclear material (SNM), reductions in the numbers and levels of personnel security clearances, use of automated access control to minimize manned positions, memoranda of understanding with local law enforcement agencies, and reduction in the frequency of SNM inventories.

Mr. Myers. Why do costs increase from $851 million in fiscal year 1995 to $881 million in fiscal year 1996?

Mr. Baker. The numbers you have cited were preliminary estimates. The FY 1996 Congressional request reflects updated estimates for FY 1995 of $832 million and for FY 1996, $864 million. This FY 1996 increase of $32 million is primarily due to several activities. Operating expenses increase $10 million due to inflation, and to support a protective force labor bargaining unit agreement at Savannah River. Line item projects at Rocky Flats and Idaho account for $17 million of the increase. Capital equipment for physical security systems at Nevada and continuation of communications and other systems upgrades at Savannah River represents a nearly $5 million increase. The current FY 1996 estimate is approximately the same as for FY 1994.

Mr. Myers. Now that the Department has transitioned many production facilities to a cleanup status, why haven't safeguards and security costs come down significantly?

Mr. Baker. We have reduced costs. The most significant savings occurred between FY 1992 and FY 1993, and again from FY 1993 to FY 1994, a total reduction of over $260 million. There is an additional $32 million reduction from FY 1994 to FY 1995.

SAFEGUARDS AND SECURITY CROSSCUT

Mr. Myers. Provide a crosscut by location of all safeguards and security funding throughout the Department for fiscal years 1994, 1995 and 1996.

Mr. Baker. The crosscut by location of all safeguards and security funding throughout the Department for fiscal years 1994, 1995, and 1996 is shown in a table which I would like to insert in the record. The information follows:

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET SUBMISSION
Safeguards and Security Crosscut Estimates
BY FACILITY
(Budget Authority in Thousands)

Organization/Facility	FY 1994 Estimate	FY 1995 Estimate	FY 1996 Request
Albuquerque			
Albuquerque Ops Office	101,162	99,297	104,236
Allied (Kansas City)	7,382	5,906	6,088
Central Training Academy	8,328	9,200	9,200
Grand Junction Project Office	878	868	842
Los Alamos Natl. Lab.	53,827	53,551	58,565
Mound	10,679	8,977	5,867
Pantex	47,566	43,204	42,745
Pinellas	4,037	3,151	2,264
Sandia – Albuquerque	42,471	41,289	42,928
Sandia – California	5,448	5,438	5,778
Sandia – Tonopah	1,445	1,450	1,527
Total, Albuquerque	283,223	272,331	280,040
Rocky Flats	64,979	65,405	78,312
Chicago			
Chicago Operations Office	2,063	1,932	1,932
Ames Laboratory	191	205	212
Argonne Natl. Lab.	12,491	13,083	13,596
Brookhaven Natl. Lab.	6,532	6,655	6,095
Fermi Natl. Lab.	2,263	2,843	2,530
New Brunswick Lab.	4,303	4,295	4,295
Princeton Plasma Phy. Lab.	1,000	1,054	1,119
Total, Chicago	28,843	30,067	29,779
National Renewable Energy Lab	1,090	1,049	1,117
Idaho	36,182	35,842	43,962
Nevada	48,854	46,876	49,848
Oak Ridge			
Oak Ridge Operations Office	12,145	11,214	11,656
Central	1,483	1,170	1,375
Continuous Beam Accel. Fac.	345	355	350
K–25 Site	11,561	10,876	11,195
Oak Ridge Institute for Science & Education	693	1,016	1,065
Oak Ridge Natl. Lab.	6,491	5,993	6,160
Paducah Gaseous Diff. Plant	1,747	1,826	1,907
Portsmouth Gaseous Diff. Plt.	19,004	12,161	2,193
Superconducting Super Collider	2,893	1,734	0
Y–12 Plant	36,175	31,858	31,554
Total, Oak Ridge	92,537	78,203	67,455

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET SUBMISSION
Safeguards and Security Crosscut Estimates
BY FACILITY
(Budget Authority in Thousands)

Organization/Facility	FY 1994 Estimate	FY 1995 Estimate	FY 1996 Request
Fernald Env. Rest. Mngmt. Corp. (FERMC)	2,788	2,644	2,644
Office of Scientific & Tech. Info.	765	790	945
Richland	51,892	40,789	40,972
Oakland			
Oakland Ops. Office	12,314	8,714	8,583
Lawrence Berkley Lab.	1,048	1,077	1,108
Lawrence Livermore Natl. Lab.	38,629	36,195	35,309
Stanford Linear Accelerator	903	889	957
Total, Oakland	52,894	46,875	45,957
Savannah River	88,770	101,112	115,442
Western Area Power Administration	958	760	810
Bartlesville Project Office	232	326	335
Morgantown Energy Tech. Center	549	595	816
Naval Petroleum & Oil Shale Res.	1,245	1,269	1,180
Pittsburgh Energy Tech. Center	1,605	1,510	724
Strategic Petroleum Reserve	14,370	15,302	15,982
Pittsburgh Naval Reactors	12,582	11,323	9,944
Schenectady Naval Reactors	14,067	14,704	14,096
Headquarters	65,932	64,463	63,988
TOTAL DOE Safeguards & Security	864,357	832,235	864,348

GUARD FORCE SIZE AND EXPENDITURE

Mr. Myers. Please provide a table showing the size of guard forces and expenditures for guard forces by location for fiscal years 1994, 1995 and 1996.

Mr. Baker. The size of guard forces and expenditures for guard forces by location for fiscal years 1994, 1995 and 1996 is shown in a table which I would like to insert in the record. The information follows:

U.S. Department of Energy
Safeguards & Security Crosscut Estimates

PROTECTIVE FORCES LEVELS AND OPERATING BUDGETS[1]

	FY 1994		FY 1995		FY 1996	
FACILITY	Total PF Personnel	Budget ($000)	Total PF Personnel	Budget ($000)	Total PF Personnel	Budget ($000)
ALBUQUERQUE	1,501	72,865	1,496	70,779	1,469	70,841
CHICAGO	263	13,694	239	14,121	234	14,798
FERNALD	35	1,864	32	1,710	32	1,710
HEADQUARTERS	142	8,922	157	10,029	157	9,629
IDAHO	353	22,177	291	20,510	230	21,218
NEVADA [2]	259	17,536	260	18,194	113	18,418
OAKLAND	333	12,096	336	11,864	329	11,698
OAK RIDGE [3]	657	42,392	628	36,806	616	36,765
RICHLAND	218	21,420	215	18,330	227	18,864
ROCKY FLATS	473	39,796	469	41,388	470	43,043
SAVANNAH RIVER [4]	1,004	38,069	969	43,752	960	54,421
STRATEGIC PET. RES.	271	13,530	266	14,578	271	15,238
PITTSBURGH NAVAL REACTOR	241	6,772	241	6,323	241	5,290
SCHENECTADY NAVAL REACTOR	138	5,862	138	6,318	138	5,771
TOTALS	5,888	316,995	5,737	314,702	5,487	327,704

[1] Protective Force budget estimates include such elements as salaries, wages, benefits, materials, supplies, management, and training.

[2] Nevada's Protective Force estimate in FY 1996 is reflective of the change in mission, however, the dollars are not expected to be significantly lower until late in FY 1996 or FY 1997.

[3] Oak Ridge figures do not include Superconducting Super Collider.

[4] Savannah River estimate in FY 1995 reflects estimated new Budget Authority for Protective Force efforts. FY 1996 reflects the extension of consolidation efforts associated with processing enriched uranium ingots and to support the new labor bargaining unit agreement.

Source: FY 1996 Congressional S&S Budget Estimate

ADDITIONAL SUPPORT

Mr. Myers. Please provide a breakdown of the specific tasks and funding associated with the "Additional Support" activity in fiscal years 1994, 1995, and 1996.

Mr. Baker. The breakdown of tasks and funding for the "Additional Support" for fiscal years 1994, 1995, and 1996 is shown in a table which I would like to insert in the record. The information follows:

ADDITIONAL SUPPORT TASKS AND FUNDING
(Dollars in Thousands)

	FY 1994	FY 1995	FY 1996
Chicago Field Office S&S Staff	$ 1,503	$ 1,532	$ 1,532
Headquarters Physical Security Upgrade Technical Assistance	313	313	313
Technical Support to Headquarters and Field Assistance	3,043	2,891	3,208
Support Services Contracts	9,165	7,695	8,587
AOSS Modernization	900	1,200	1,493
Maintenance of Headquarters Security Alarm	290	350	350
Total Additional Support	$15,214	$13,981	$15,483

MAINTENANCE OF SEPARATE OFFICES FOR S&S ACTIVITIES

Mr. Myers. Why do other program organizations in the Department need to maintain separate offices for safeguards and security activities?

Mr. Baker. Other DOE program organizations have maintained that it is necessary to operate separate safeguards and security functions in order to provide program management and direction as well as field assistance in the Safeguards and Security area.

Mr. Myers. Isn't this a duplication of effort and confusing to the field and contractor organizations who may receive conflicting guidance?

Mr. Baker. The problems of duplication and redundancy of effort have been raised and several options to correct this situation are under consideration. More importantly, the Secretary's Strategic Alignment Team has been charged to eliminate redundancy across all areas of the Department, including Safeguards and Security. The Strategic Alignment Team has been briefed on the Safeguards and Security issue and it is anticipated that the Team report will include recommendations to correct any duplication and redundencies.

SECURITY INVESTIGATIONS UNCOSTED BALANCES

Mr. Myers. Why does this program have very large uncosted balances?

Mr. Baker. The Department continues to downsize the number of classified activities. The clearances are estimated to be reduced from 154,000 to approximately 142,000 as a result of downsizing, continuation of the national laboratories' direction to eliminate corporate policies that require all employees to be cleared as a condition of employment, and the Department's ongoing efforts to reduce the numbers and levels of DOE access authorizations. However, as a result of these positive efforts, unanticipated large uncosted balances have occurred.

Mr. Myers. What steps are being taken to reduce these balances?

Mr. Baker. The Department has been proactive in utilizing prior year uncosted balances to offset new obligational authority (NOA) requirements. In FY 1994, we reduced NOA through the use of $13 million of prior year uncosted. In FY 1995, we are using approximately $5 million and, as you can see, our FY 1996 NOA has been reduced by $13 million. We believe that uncosted balances will be at an acceptable level by the end of FY 1996.

SECURITY INVESTIGATIONS - STATISTICS

Mr. Myers. Provide by location the number and types of clearances held by DOE employees, contractors and other federal employees in FY 1994 and FY 1995.

Mr. Baker. Summaries by location of DOE clearance statistics for FY 1994 and FY 1995 are shown in two tables which I would like to insert in the record. The information follows:

CLEARANCE STATISTICS FOR FY 1994

	DOE EMPLOYEES	DOE CONTRACTORS	OGA	CONGRESS	TOTAL
ALBUQUERQUE					
Q	1,539	31,453	154	0	33,146
TS	0	0	0	0	0
L	72	2,443	0	0	2,515
S	0	0	0	0	0
Total	1,611	33,896	154	0	35,661
CHICAGO					
Q	236	1,013	2	0	1,251
TS	0	0	0	0	0
L	23	368	0	0	391
S	0	0	0	0	0
Total	259	1,381	2	0	1,642
HEADQUARTERS					
Q	3,818	2,803	4,111	287	11,019
TS	123	14	3	0	140
L	61	238	153	1	453
S	399	531	9	0	939
Total	4,401	3,586	4,276	288	12,551
IDAHO					
Q	267	2,987	33	0	3,287
TS	0	0	0	0	0
L	173	8,024	9	0	8,206
S	0	0	0	0	0
Total	440	11,011	42	0	11,493
NEVADA					
Q	394	5,515	24	0	5,933
TS	0	0	0	0	0
L	0	172	1	0	173
S	0	0	0	0	0
Total	394	5,687	25	0	6,106
OAK RIDGE					
Q	553	14,583	77	0	15,213
TS	0	0	0	0	0
L	285	7,752	20	0	8,057
S	0	3	0	0	3
Total	838	22,338	97	0	23,273
OAKLAND					
Q	203	12,542	6	0	12,751
TS	0	0	0	0	0
L	28	355	0	0	383
S	2	0	0	0	2
Total	233	12,897	6	0	13,136

CLEARANCE STATISTICS FOR FY 1994
(Continued)

	DOE EMPLOYEES	DOE CONTRACTORS	OGA	CONGRESS	TOTAL
PITTSBURGH					
Q	268	3,275	27	0	3,570
TS	0	0	0	0	0
L	0	6,196	5	0	6,201
S	0	0	0	0	0
Total	268	9,471	32	0	9,771
RICHLAND					
Q	90	1,849	14	0	1,953
TS	0	0	0	0	0
L	135	2,638	13	0	2,786
S	0	0	0	0	0
Total	225	4,487	27	0	4,739
ROCKY FLATS					
Q	154	6,212	7	0	6,373
TS	0	0	0	0	0
L	29	520	3	0	552
S	0	0	0	0	0
Total	183	6,732	10	0	6,925
SAVANNAH RIVER					
Q	408	10,610	39	0	11,057
TS	0	3	0	0	3
L	103	10,205	3	0	10,311
S	0	0	0	0	0
Total	511	20,818	42	0	21,371
SCHENECTADY					
Q	89	1,542	14	0	1,645
TS	0	0	0	0	0
L	0	5,632	0	0	5,632
S	0	0	0	0	0
Total	89	7,174	14	0	7,277
TOTALS					
Q	8,019	94,384	4,508	287	107,198
TS	123	17	3	0	143
L	909	44,543	207	1	45,660
S	401	534	9	0	944
GRAND TOTAL	9,452	139,478	4,727	288	153,945

CLEARANCE STATISTICS FOR FY 1995

	DOE EMPLOYEES	DOE CONTRACTORS	OGA	CONGRESS	TOTAL
ALBUQUERQUE					
Q	1,271	28,152	138	0	29,561
TS	0	0	0	0	0
L	305	4,524	11	0	4,840
S	0	0	0	0	0
Total	1,576	32,676	149	0	34,401
CHICAGO					
Q	222	889	2	0	1,113
TS	0	0	0	0	0
L	27	290	0	0	317
S	0	0	0	0	0
Total	249	1,179	2	0	1,430
HEADQUARTERS					
Q	3,804	2,688	4,078	233	10,803
TS	1	0	0	0	1
L	383	654	173	0	1,210
S	0	0	0	0	0
Total	4,188	3,342	4,251	233	12,014
IDAHO					
Q	243	1,775	25	0	2,043
TS	0	0	0	0	0
L	187	4,443	8	0	4,638
S	0	0	0	0	0
Total	430	6,218	33	0	6,681
NEVADA					
Q	388	4,625	32	0	5,045
TS	0	0	0	0	0
L	0	123	6	0	129
S	0	0	0	0	0
Total	388	4,748	38	0	5,174
OAK RIDGE					
Q	556	13,321	56	0	13,933
TS	0	0	0	0	0
L	279	7,853	17	0	8,149
S	0	3	0	0	3
Total	835	21,177	73	0	22,085
OAKLAND					
Q	214	11,542	5	0	11,761
TS	0	0	0	0	0
L	34	906	0	0	940
S	0	0	0	0	0
Total	248	12,448	5	0	12,701

CLEARANCE STATISTICS FOR FY 1995
(Continued)

	DOE EMPLOYEES	DOE CONTRACTORS	OGA	CONGRESS	TOTAL
PITTSBURGH					
Q	248	3,026	20	0	3,294
TS	0	0	0	0	0
L	0	6,938	4	0	6,942
S	0	0	0	0	0
Total	248	9,964	24	0	10,236
RICHLAND					
Q	74	1,528	14	0	1,616
TS	0	0	0	0	0
L	140	2,233	12	0	2,385
S	0	0	0	0	0
Total	214	3,761	26	0	4,001
ROCKY FLATS					
Q	155	5,511	43	0	5,709
TS	0	0	0	0	0
L	30	583	8	0	621
S	0	0	0	0	0
Total	185	6,094	51	0	6,330
SAVANNAH RIVER					
Q	398	9,045	90	0	9,533
TS	0	0	0	0	0
L	136	11,018	40	0	11,194
S	0	0	0	0	0
Total	534	20,063	130	0	20,727
SCHENECTADY					
Q	86	1,408	15	0	1,509
TS	0	0	0	0	0
L	0	5,207	20	0	5,227
S	0	0	0	0	0
Total	86	6,615	35	0	6,736
TOTALS					
Q	7,659	83,510	4,518	233	95,920
TS	1	0	0	0	1
L	1,521	44,772	299	0	46,592
S	0	3	0	0	3
GRAND TOTAL	9,181	128,285	4,817	233	142,516

SECURITY REINVESTIGATIONS SAVINGS

Mr. Myers. How much could be saved by increasing the length of time between security reinvestigations by one year?

Mr. Baker. Based on the current number of active security clearances, less than $4.0M per year could be saved by increasing the time between reinvestigations from five to six years.

Mr. Myers. What length of time do other agencies use for reinvestigations?

Mr. Baker. The Department of Energy reinvestigation 5-year cycle is consistent with all other Government agencies.

EMERGENCY OPERATIONS

Mr. Myers. How are efforts of this office coordinated with emergency response and operations activities funded in other DOE program areas? Could cost savings be achieved by consolidating all of these activities under one manager?

Mr. Baker. The Office of Emergency Management has responsibilities for overall direction of the Department's Emergency Management System, which provides a consistent framework for the Department's emergency planning, preparedness, readiness assurance, and response activities. The Office of Emergency Management serves as the Department's focal point and interagency point-of-contact for all emergency planning, preparedness and response activities. In addition, this Office serves as the point-of-contact for assessments of hostile threats to Departmental facilities and all nuclear threat assessments.

The Emergency Management System has been established to ensure that the Department maintains a fully coordinated and integrated emergency management program. Coordination is accomplished by the Office of Emergency Management through a number of mechanisms and activities, including: chairing the Department's Emergency Management Advisory Committee, which is comprised of representatives of all Departmental elements with emergency responsibilities and interests; participation in the directives development process which sets Departmental responsibilities, authorities, and requirements; review and coordination of emergency readiness assurance plans; concurrence in selection of Departmental representatives to interagency and international committees, work groups, and task forces; and standardization of emergency terminology and concepts, emergency planning and preparedness guidance and training programs.

On May 12, 1994, Under Secretary Curtis established a Task Force to review consolidation of Headquarters Emergency Management functions and activities to promote efficiency and reduce costs. The Task Force concluded that the existing Emergency Management System provides the basis for an efficient operating system within and outside the Department, and that no significant cost saving could be realized by consolidating Headquarters Emergency Management functions and activities. However, the Task Force identified several enhancements to improve efficiencies and reduce costs.

Some actions associated with these activities to reduce cost and promote efficiency were put on hold as a result of the Secretary's strategic alignment initiative, which commenced activities on January 3, 1995. One of the charges of the Strategic Alignment Team is to identify ways to reduce costs and promote efficiencies by elimination of redundancies and duplications across the Department. A report is to be delivered by April 28, 1995, with implementation of Departmentally accepted recommendations by September 30, 1995.

EMERGENCY OPERATIONS

Mr. Myers. Please provide a Department-wide crosscut of emergency response and operations funding by program and account, and associated FTEs for fiscal years 1994, 1995, and 1996.

Mr. Baker. I would like to provide tables for the record which list the funding and associated FTEs for the Department's emergency response and operations programs. The information follows:

Department of Energy
Emergency crosscut table
(Dollars in millions)

Organization Appropriation Program	FY 94	FY 95	FY 96
Defense Programs			
Weapons Activities			
Stockpile Management			
Core Stockpile Management			
Field Emergency Operations Center (EOC)	7.3	5.5	5.7
Radiological/Nuclear Accident Response			
Nuclear Emergency Search Team (NEST)	31.3	33.5	33.5
Federal Radiological Monitoring and Assessment Center (FRMAC)	1.0	1.0	1.0
Aerial Measurements System (AMS)	9.2	10.6	10.6
Atmospheric Release Advisory Capability (ARAC)	8.2	7.4	7.4
Accident Response Group (ARG)	8.8	10.1	10.9
Radiological Assistance Program (RAP)	2.2	2.4	2.4
Radiation Emergency Assistance Center/Training Site (REAC/TS)	0.7	0.9	1.0
Special Applications	3.7	2.9	2.9
Emergency Management Support	0.3	0.3	0.3
Washington Aerial Measurements Operations Facility Replacement	0.0	0.0	0.9
Subtotal, Defense Programs 1/	72.7	74.6	76.6
Nonproliferation & National Security			
Weapons Activities			
Program Direction			
Emergency Management	17.3	17.3	20.1
Emergency Preparedness			
Emergency Preparedness	4.8	4.6	4.6
Subtotal, Nonproliferation & National Security	22.1	21.9	24.7
Office of Policy			
Emergency Preparedness			
Emergency Planning	4.1	3.6	3.6
Office of Nuclear Energy			
Nuclear Energy Research and Development			
Oak Ridge Landlord, Emergency Operations Center	1.5	1.4	1.4
Office of Civilian Radioactive Waste Management			
Nuclear Waste Fund			
Nuclear Waste Policy Amendments Act Section 180(c) Implementation	0.2	0.2	0.2
Bonneville Power Administration	0.2	0.3	0.3

1/ Defense Programs funding for FY 1994 and FY 1995 is provided on a comparable basis.

Department of Energy
Emergency crosscut table
(Dollars in millions)

Organization Appropriation Program	FY 94	FY 95	FY 96
Assistant Secretary for Fossil Energy			
Strategic Petroleum Reserve	206.8	243.7	312.7
Fossil Energy Research and Development	0.4	0.4	0.4
Naval Petroleum Reserves	0.3	0.3	0.3
Subtotal, Assistant Secretary for Fossil Energy	207.5	244.4	313.4
Environmental Management			
Defense Environmental Restoration and Waste Management			
Waste Management			
Waste Isolation Pilot Plant			
Western Governors Association	1.2	0.1	1.2
Emergency Response Agreeement between New Mexico and DOE (STIPULATED AGREEMENT)	0.0	0.7	0.7
Subtotal, Waste Management	1.2	0.8	1.9
Environmental Restoration			
Fernald			
Emergency Preparedness	1.2	1.6	1.6
Compliance and Program Coordination			
Emergency Management	10.1	16.0	26.8
Nuclear Material and Facility Stabilization			
Albuquerque Operations Office			
Emergency Operations	0.0	0.0	0.2
Idaho Operations Office			
INEL Emergency Preparedness	2.1	2.4	2.0
INEL Emergency Response Facility Project	1.0	5.3	5.2
INEL Firefighters	4.7	3.6	3.7
Ohio Field Office			
Emergency Operations	0.0	0.0	0.3
Richland Operations Office			
Field Emergency Operations Center and Field Emergency Preparedness	5.3	5.4	4.8
Rocky Flats Office			
Emergency Operations Center	0.3	0.3	0.2
On-Site Emergency Preparedness	3.8	3.8	3.2
Off-Site Emergency Preparedness	0.6	0.6	0.5
Subtotal, Nuclear Material and Facility Stabilization	17.8	21.4	20.1
Subtotal, Defense Environmental Restoration and Waste Management	30.3	39.8	50.4
TOTAL, Department of Energy	338.6	386.2	470.6

Department of Energy
Emergency crosscut table
Federal FTE's

Organization Appropriation Program	FY 94	FY 95	FY 96
Defense Programs			
Weapons Activities			
Stockpile Management 2/	26	26	26
Nonproliferation & National Security			
Weapons Activities	29	28	28
Emergency Preparedness	41	39	39
Subtotal, Nonproliferation & National Security	70	67	67
Office of Policy			
Emergency Preparedness	26	26	25
Office of Nuclear Energy			
Nuclear Energy Research and Development	0	0	0
Office of Civilian Radioactive Waste Management			
Nuclear Waste Fund	1	1	1
Bonneville Power Administration	8	6	6
Assistant Secretary for Fossil Energy			
Strategic Petroleum Reserve	173	166	165
Fossil Energy Research and Development	1	1	1
Naval Petroleum Reserves	1	1	1
Subtotal, Assistant Secretary for Fossil Energy	175	168	167
Environmental Management			
Defense Environmental Restoration and Waste Mgmt.			
Waste Management	1	1	1
Environmental Restoration	1	1	1
Compliance and Program Coordination	3	3	3
Nuclear Material and Facility Stabilization	95	95	89
Subtotal, Defense Environmental Restoration and Waste Management	100	100	94
TOTAL, Department of Energy	406	394	386

2/ Defense Programs Federal FTEs for FY 1994 and FY 1995 are provided on a comparable basis.

Mr. Myers. How many support service contractors are funded in this program?

Mr. Baker. The Office of Emergency Management funds 24 support service contractors, 14 individuals in direct support of the 24-hour Watch Office function and 10 individuals in support of the activities of the Planning and Preparedness and Response divisions. In addition, the Office of Emergency Management funds a roster of 48 technical experts who are used on a case-by-case basis to augment the technical capabilities of the staff for the conduct of evaluations and appraisals. These technical experts are typically employed for periods of five to ten days to support these activities, and would account for no more than five FTEs per year.

Mr. Myers. Please describe how the emergency management activities funded by the Interior Appropriations Subcommittee differ from those funded by this subcommittee?

Mr. Baker. The emergency management activities funded by the Interior Appropriations Subcommittee have two principal components. They are: (1) planning, which includes broad energy policy formulation and guidance reporting to the Assistant Secretary for Policy; and (2) operations, which includes activities to identify and assess emergency energy situations and ensures an integrated response reporting to the Office of Emergency Management. Both of these functions are an outgrowth of the price and allocation programs administered by the Economic Regulatory Administration which historically have been funded with other Federal energy administration programs under the Interior Appropriation.

The operations function is primarily involved with national security matters related to impacts of supply disruptions on national security, public safety and the energy infrastructure. We provide direct support to the Federal Emergency Management Agency during supply disruptions caused by natural disasters or man-made events under the Federal Response Plans, and support for their continuity of government and operations activities. In addition, we work with other Federal, state and local governments and industry for direct response to disasters and to provide assistance in restoration of essential energy services.

In contrast, emergency management activities funded by the Energy and Water budget are directed towards DOE operations and activities which include: maintaining the national security and protection of workers, the public, and the environment through comprehensive emergency planning, preparedness, and response programs; developing, maintaining, and promulgating planning and preparedness guidance and readiness assurance activities for effective implementation of the Department's emergency management system; operating and maintaining the Headquarters Emergency Operations Center and Technical Support Center for effective and efficient emergency notification and response; and providing program direction for operation of the Liquefied Gaseous Fuels Spill Test Facility program for conducting spill tests.

Mr. Myers. Why should individual program offices have their own emergency management organizations when there is a central Departmental office for emergency management?

Mr. Baker. The Office of Emergency Management provides overall direction for the Department's Emergency Management System through the promulgation of requirements, implementing guidance, and technical standards. The Office of Emergency Management also ensures the readiness of the emergency response capabilities of Departmental elements through appraisals of emergency management programs, evaluations of emergency response exercises, and reviews of Emergency Readiness Assurance Plans developed by contractor and Departmental elements.

The emergency management organizations within individual program offices provide program-specific implementation of the requirements, guidance, and technical standards associated with the Emergency Management System. In addition, Defense Programs provides programmatic direction for the Department's seven radiological emergency response assets, which include: the Nuclear Emergency Search Team; Accident Response Group; Aerial Measuring System; Atmospheric Release Advisory Capability; Federal Radiological Monitoring and Assessment Center; Radiation Emergency Assistance Center/Training Center; and, Radiological Assistance Program. Environmental Management provides programmatic direction for the transportation emergency preparedness program.

Mr. Myers. Please provide a list of all tests performed or planned at the Liquefied Gaseous Spill Test Facility in fiscal years 1994, 1995 and 1996?

Mr. Baker. Provided below is a list of all tests performed or planned at the Liquefied Gaseous Spill Test Facility in fiscal years 1994, 1995 and 1996. Additionally, I have "letters of intent" from various industry (Mitsubishi Heavy Industries, Exxon Research and Engineering, and DuPont Specialty Chemicals), and other government agencies (Environmental Protection Agency and DOD Central Masint Office) citing their intended use of the Spill Test Facility in FY 1996 which I would like to insert in the record. The information follows:

FY 1994

Sponsor	Program
DOE/NN-20	Chemical Analysis by Laser Interrogation of Proliferation Effluents (CALIOPE)
Aerospace Corporation	Effluent Tracking Experiment (ETE)

FY 1995

Sponsor	Program
DOE/NN-20	CALIOPE (October 1994 plus May/June/July 1995)
DuPont	HAZMAT Training (November 1994)
Aerospace Corporation	ETE (December 1994)
Science Application International Corporation	Holistic UAV/SAW Sensor Integration Effort (HUSSIE)
US Environmental Protection Agency	Carbon Dioxide
EXXON Research and Engineering Petroleum Environmental Research Forum (PERF)	Carbon Dioxide Dispersion Modeling
Stanford Research Institute	Nonproliferation Sensor Development

FY 1996

Sponsor	Program
DOE/NN-20	CALIOPE
DuPont	HAZMAT Training
Aerospace Corporation	ETE
USEPA	Various HAZMAT Releases
Science Application International Corporation	HUSSIE
Mitsubishi Heavy Industries	LNG Dispersion
EXXON Research and Engineering PERF	Dispersion Modeling Project
DOD/Central Masint Office	UAV Battlefield Environment Test with simulated presence of chemical weapons
Stanford Research Institute	Nonproliferation Sensor Development
Gas Research Institute	Refrigerated Ammonia Test
NN-60/Industry	Collaborative HAZMAT Training

MITSUBISHI HEAVY INDUSTRIES AMERICA, INC.

March 6, 1995

Mr. Albert G. Dietz, Jr., Senior Scientific and Technical Advisor
Office of Fossil Energy, Department of Energy
Washington DC 20545
fax: (301) 903 - 4106
tel: (301) 903 - 2617

Dear Mr. Dietz:

Thank you very much for your kind hospitality during Dr. R. Ohba of MHI-Nagasaki R&D Center and my visit to your NEVADA-LGFSTF.

As we discussed with you at NEVADA Test Site, we have a plan to conduct LNG dispersion experiments in Summer 1996 at your test site, and now we are under project planning work and cost estimation work with Dr. Havens of University of Arkansas. He will help MHI as the experiment director of the test.

Then, you are kindly requested to be informed that we have intent to conduct the experiment mentioned above, and please let us know as soon as possible if there are any difficulties for our conducting experiments mentioned above in Summer 1996.

We would like to ask you to give the information for our current work if necessary, and we would like to have some discussion with you after our current work is finished.

Your kind cooperation will be highly appreciated.

Sincerely yours,

M. Harada

Makoto Harada
Manager, Research and Business Development

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Fax 201 765-1496

G.K. Kohler
Manager

K.W. Steinberg
Engineering Associate

March 6, 1995

PERF Testing At The Nevada
Spill Test Facility

95ECS1 037

Mr. Albert G. Dietz
U.S. Department of Energy
Office of Non-Proliferation & National Security, NN-60
1000 Independence Avenue, SW
Washington, D.C. 20585

Dear Al:

As you know, a series of field experiments are scheduled by the PERF 93-16 Dispersion Modeling Project at Department of Energy's (DOE) Spill Test Facility (STF) in Nevada during late summer this year. In your call of March 3, 1995 to me, you were interested to learn if the Project or PERF is planning additional tests in 1996 and beyond at the STF.

The PERF 93-16 Project is not planning additional testing at the STF in 1996 or beyond at this time. However, if construction equipment is not able to access the site due to wet ground conditions, the possibility exists that the '95 field experiments may be scrubbed and rescheduled as were the second series of CO_2 experiments by the Environmental Protection Agency. This situation is viewed as remote at this time. As far as other PERF projects conducting tests at the STF, that is possible. But, I know of no project actively planning to use the site at this time.

However within industry, the STF is recognized as a world class facility for atmospheric research into dispersion and mitigation of hazardous substances. Industry's interest in utilizing the site is demonstrated by our record of working at the Nevada site. Further, the importance of atmospheric dispersion and mitigation research for accidental releases of hazardous substances is expected to continue in the coming years. As other PERF projects become better defined, utilizing the STF will surely be considered so long as it remains operational, efficient, and cost-effective.

If you have any further questions regarding PERF projects, please contact members of the PERF management committee.

Very truly yours,

Kenneth W. Steinberg

Kenneth W. Steinberg

DuPont Specialty Chemicals
Chestnut Run Plaza
P.O. Box 80709
Wilmington, DE 19880-0709
Fax (302) 999-4396
Telex 650 339 6061 MCIUW

DUPONT

DuPont Specialty Chemicals

December 22, 1994

Dr. Albert G. Dietz
U.S. DEPARTMENT OF ENERGY
Office of Energy Management, NN-60
270 CC, Room 3049
Washington, D.C. 20585

Dear Dr. Dietz:

This letter is to confirm our earlier conversation regarding the use of the DOE's Liquefied Gaseous Fuels Spill Test Facility (LGFSTF) in Mercury, Nevada. DuPont Specialty Chemicals (the Specialty Sulfur Products, Acids and Services Business) would like to reserve the three weeks of May 13, 20, and 27 in 1996 for our Fuming Acids Mitigation Workshops. We anticipate running three one-week workshops during this time. The schedule may be adjusted if the number of expected participants increases/decreases. We will keep your office informed of our plans as the reserved dates get closer. If you have any questions, please let me know at (302) 999-3480.

Sincerely,

Mark J. Salzbrenner

Mark J. Salzbrenner
Sr. Technical Service Engineer
DuPont Specialty Chemicals

MJS/lr

Recd 1/20/95

All technical information and designs are rendered by DuPont free of charge. The information contained is believed to be reliable by DuPont and is intended for use by persons having skill and know how. It may not be all-inclusive and suitability to local codes and practices should be confirmed by the user. The information is given and accepted at the user's risk and DuPont makes no guarantee of results and assumes no responsibility for results obtained or damages incurred from use of the information in whole or in part. [illegible]

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

MAR 10 1995

OFFICE OF
SOLID WASTE AND EMERGENCY
RESPONSE

Al Dietz
US DOE
Office of Emergency Management
NN-60
270 CC Room 3047
Washington DC 20585

Dear Mr. Dietz;

The purpose of this letter is to inform you of our intent to continue to encourage spill tests, atmospheric dispersion model tests, mitigation system tests and research at the Nevada Flats Liquified Gaseous Fuels Spill Test Facility. Depending on the outcome of tests scheduled for the near future, we also hope to encourage domestic and international organizations to continue to use the facility for further model validation studies.

Under Title IX of the Clean Air Act of 1990, as amended, (CAA), EPA has been given the responsibility for spill tests of at least 2 substances per year. In addition, under Title III of the CAA, EPA must require sources handling certain substances to assess worst case and other more likely accidental release scenarios. Given these mandates, EPA believes it is absolutely necessary that research work on the validity of atmospheric dispersion modeling tools and their application to real-world disaster situations continue.

If you have any questions about our chemical accident prevention and research efforts, please contact me at 202-260-8600 or Craig Matthiessen at 202-260-9781.

Sincerely,

Jim Makris, Director
Chemical Emergency Preparedness
and Prevention Office

cc. C. Matthiessen

Al Thanks for continuing to focus on this important issue Jim

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DEPARTMENT OF DEFENSE
UNITED STATES OF AMERICA

CENTRAL MASINT OFFICE
Central MASINT Technology Coordination Office (CMTCO)

3-Mar-95

MEMORANDUM FOR Dr. A. Dietz, Department of Energy

FROM: CMTCO/SI Patrick AFB, FL

SUBJECT: Future Use of Nevada Spill Test Facility

1. As you know, CMTCO, under Defense Airborne Reconnaissance Office (DARO) sponsorship, will conduct the first flight test of a MASINT sensor on board an unmanned aerial vehicle (UAV) in April, 1995 at the DOE's Nevada Test Site/ Liquefied Gaseous Fuels Spill Test Facility. This test will simulate an austere battlefield environment with the simulated presence of chemical weapons. A UAV, integrated with a chemical agent detection, identification, and quantification device, will fly through a cloud of simulated chemical agents and data-link information specific to the cloud back to a remotely located ground control station. The uniqueness of this test is demonstrated by the fact that no direct human contact with the chemical simulant will be required. This same type of system, in a real chemical environment, would increase personnel survivability because of it's ability to remotely detect, identify, and quantify potentially lethal chemical agents.

2. DOE's Spill Test Facility provides the ideal environment, isolation, and flexibility we require to carry out this type of concept demonstration flight. Additionally, DOE personnel we have worked with throughout the concept and planning stages of this effort have been extremely helpful in virtually every matter -- safety, logistics, personnel accommodations, document preparation and review, and countless others. We feel this entire effort has been successful because of the team approach taken by all involved, especially DOE/NV.

3. Based upon these facts, we feel that some future CMTCO/DARO tests that we conduct would be very well accommodated at the STF. We have spoken with CMTCO and DOE personnel about other flight tests within the next two fiscal years that could only work within our concept of operations if conducted at your Spill Test Facility.

3. We look forward to the impending success of our test at STF in April, and to a mutually beneficial relationship between our two organizations in the future. If I can be of further assistance, please call me or Mr. Nick Gritti at (407) 494-4788.

Robert D. Reehoorn. Major. USAF
Chief, Sensor Integration

Pioneering the MASINT Edge

Mr. Myers. How are the proposed program activities at the LGFST coordinated with the Office of Energy Research's program of atmospheric studies to validate models of chemical dispersion? Have your reviewed this program to see if it meets the needs of the emergency operations program?

Mr. Baker. The proposed program activities at the Liquefied Gaseous Fuels Spill Test Facility (LGFSTF) are coordinated and will complement the Office of Energy Research's program of atmospheric studies to validate models. Energy Research supports a meteorological sciences program that conducts research on atmospheric flow and the transport and diffusion of atmospheric contaminants in areas of complex terrain. The scales of interest range from 1 or 2 kilometers out to distances of 100 kilometers or more. The studies are related to problems of air quality and emergency response monitoring and modeling, but are not chemical specific for investigating discrete species dispersion physics phenomenology.

The pollutants of interest (such as sulfur dioxides and particulates from fossil fuel power plants and radionuclides from nuclear power plants) are typically buoyant or neutrally-buoyant in nature rather than dense gases (such as liquefied natural gas, chlorine, ammonia, etc.), although at distances of several kilometers from a source (the far field), a dense gas would typically be diluted to sufficient levels that findings from this program would be relevant.

However, all of the models used for prediction of air pollutant dispersion or radionuclide dispersion, including those which have been implemented by emergency management activities are presently based on passive dispersion modeling principles. It is now generally recognized that passive dispersion models do not account for several important physical effects upon dispersion which can significantly effect the dispersion (particularly in the near field, i.e., the scales of interest range from 0 kilometers out to 1 or 2 kilometers) of clouds formed from accidental releases of hazardous chemicals.

The LGFSTF was specifically designed to investigate the physical effects associated with dense gas dispersion. It can play an important role in providing for the required field-test verification of dense gas models which are particular to chemical specific emergency response management requirements.

NAVIGATOR STUDY

Mr. Frelinghuysen. DOE has embarked on a number of studies and analyses to review functions and potential cost reductions -- the Galvin Report is an example. Please describe a study called "Navigator" including the intent of the study.

Dr. Reis. Given the Nation's national security requirements and the expected future weapons complex environment, including resources, I determined the need for a Defense Programs (DP) planning process that could be visionary in thinking to look far enough into the future so that fundamental paradigm shifts may be implemented without getting caught up in a day-to-day crush of business. Therefore, I initiated the Navigator Study, also known as Vision 2010. It is part of an ongoing internal DP strategic planning process, intended to look at the weapons complex of today and what it might look like in the year 2010 in terms of physical layout as well as qualitative and quantitative capabilities.

Mr. Frelinghuysen. Who is involved and the likely date the study will conclude?

Dr. Reis. Senior Federal managers within Defense Programs headquarters and field staffs and senior laboratory managers form the study team cadre. I view this as a key aspect of strategic planning for Defense Programs. As such, it will be part of a continuous improvement process with no specific end date.

Mr. Frelinghuysen. Also provide similar information on any follow-on studies relative to the Navigator study.

Dr. Reis. The next major event in this process is the completion of the Stockpile Stewardship and Management Programmatic Environmental Impact Statement.

Mr. Frelinghuysen. Is the purpose of the Navigator study or any follow-on studies to support a recommendation that the weapons labs at Lawrence Livermore, Sandia, and Los Alamos continue at the current levels of effort, manpower and funding they have maintained for the past several decades?

Dr. Reis. No, the purpose of the Navigator study, as part of Defense Programs ongoing planning process, was to visualize what Defense Programs might look like in the year 2010, given the Nation's national security requirements and the expected environment, including resources. Some initial study determinations recognized the need to consolidate activities, while providing the capability to cost-effectively remanufacture weapons. In this scenario, the weapons laboratories must assume more responsibility for production capability in addition to their existing responsibilities.

LABORATORY MANPOWER AND FUNDING

Mr. Frelinghuysen. Provide the stockpile-related manpower and funding levels for the DOE weapons labs in FY's 1985, 1990, and 1995 as well as projections for FY 1998. Describe any reductions which have occurred in the last five years as well as any reductions planned for the future.

Dr. Reis. Stockpile related activities at the weapons laboratories have been, in total, remarkably stable during the last decade, with a loss of full time equivalents between FY 1990 and FY 1995 of 1,211, as shown in a table, which I would like to insert in the record. The information follows:

STOCKPILE STEWARDSHIP AND MANAGEMENT
Laboratory FTE's and Funding
FY 1985, 1990, and FY 1995

	FY 1985	FY 1990	FY 1995	Change
Laboratory Full Time Equivalents	11,876	11,450	10,239	(1,211)
Operating Expense Dollars in Millions	$1,217.4	$1,320.1	$1,298.0	($22.1)

However, during this period the specific activities carried out by the laboratories have changed considerably. The biggest change at the laboratories has been the migration of Stockpile Management activities from the production plants to the laboratories. This movement of responsibilities from Rocky Flats, Mound, and Pinellas to Sandia, Los Alamos, and to a lesser degree Lawrence Livermore has increased FTE's in these areas at the laboratories by about 740 between FY 1990 and FY 1995 (since FY 1989 the increase is about 1,460). Another area of significant programmatic growth at the laboratories has been in the increased emphasis on research and development in partnership with private industry. These efforts to transfer technology between the public and private sectors, new since FY 1990, now employs over 1,200 FTE's at the laboratories.

Stockpile related areas that have seen declines between FY 1990 and FY 1995 are primarily activities associated with the development of new weapons systems. A major effort that has been terminated was the Nuclear Directed Energy Weapons (NDEW) program, the Department's research efforts associated with the Strategic Defense Initiative. The NDEW program supported about 800 FTE's in FY 1990. Another group of FTE's that have been reallocated to other activities are the 1,400 that supported underground nuclear testing in FY 1990. A third major area of FTE reductions since FY 1990 has been the area of direct laboratory research support of the weapons stockpile. While efforts such as the archiving of past testing data and support of weapons dismantlements have grown over this time period, the lack of new weapon development projects and the decreasing size of the active stockpile has allowed major reductions in that area. All told, direct laboratory research support of the weapons stockpile has seen a reduction in FTE's of about 1,100 since FY 1990.

The last major parts of the laboratories' stockpile related activities have seen only modest decreases between FY 1990 and FY 1995. The Core Research and Advanced Technology efforts, the scientific base programs of the laboratories, have lost about 170 FTE's over the 5 year period, and the Inertial Confinement Fusion program lost about 130. As stated before, the net effect of all of these major program changes between FY 1990 and FY 1995 has been a decrease of 1,211 full time equivalents.

As we move to implement the Stockpile Stewardship program, the laboratories will continue to transition into areas such as major new efforts in computational simulations associated with the Advanced Strategic Computing Initiative and increased research into the production processes of the new complex. At the same time, research efforts no longer required to maintain the stockpile to provide confidence in the nation's nuclear deterrent will be phased out. In general, we expect these two currents to roughly equal each other in size, such that the total weapons related efforts at the laboratories will remain at about the present level, under current policy guidance and planning assumptions.

NAVIGATOR STUDY

Mr. Frelinghuysen. Does the Navigator study include an analysis of other stockpile functions, such as manufacturing capabilities, quality assurance, stockpile reliability or weapons safety, within the DOE complex? If so, please describe.

Dr. Reis. Yes. It has been recognized that, at low rates of manufacture, the surveillance and manufacturing capability must be highly integrated with the technological backbone, that is the laboratories. However, indepth estimates of options for assuring these capabilities have not been done; they will be done as a part of the planning to support the upcoming programmatic environmental impact statement on stockpile stewardship and stockpile management.

WEAPONS ACTIVITIES

Mr. Frelinghuysen. Describe FY 94 and FY 95 production requirements at facilities such as Pantex, Kansas City facility, and Y12. Describe the types and numbers of non-nuclear weapon components provided by each of these facilities. Provide projections for FY 99.

Dr. Reis. The production requirements from FY 1994 through FY 1999 are shown by site in a table which I would like to insert into the record. The information follows:

DELETED

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DELETED

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DELETED

NAVIGATOR STUDY

Mr. Frelinghuysen. As a result of any decisions made subsequent to the Navigator study or follow-on studies, how will DOE guarantee meeting production requirements. What is DOE's contingency planning for production capability?

Dr. Reis. No decisions have been made. The Department is exploring with the Department of Defense the ability to requalify weapons and retrofit or remanufacture weapons using existing technologies. We are also evaluating our ability to produce a limited number of new weapons at the weapons laboratories and possibly other locations. We continue to produce limited-life components and make other improvements necessary for the existing weapons. The programmatic environmental impact statement on stockpile stewardship and stockpile management will provide options the Department will propose to meet future production and contingency requirements.

With regard to tritium, the Department has requested funding in FY 1996 to begin the process to acquire a new tritium source. As discussed in the draft programmatic environmental impact statement on tritium released March 1, 1995, the Department will also evaluate contingency options in the event tritium is required sooner than now anticipated, which is 2011.

Mr. Frelinghuysen. Does the Navigator study have a specific cost-reduction goal or amount of desired savings?

Dr. Reis. No, although we expect the 2010 complex will be less costly than today's complex.

Mr. Frelinghuysen. From what portion of the complex will these savings come?

Dr. Reis. We anticipate that any savings will result from streamlining the complex. Specific savings cannot be identified until the Stockpile Stewardship and Management Programmatic Environmental Impact Statement process is completed and appropriate implementation options are reviewed and strategies chosen.

Mr. Frelinghuysen. What is the schedule and process to make final decisions resulting from the Navigator study?

Dr. Reis. The Department continues to try to better understand the program requirements in coordination with the Department of Defense. In the next few weeks, the Department will begin the programmatic environmental impact statement process for stockpile stewardship and stockpile management which will consider alternatives for meeting the program requirements. This is expected to lead to a Record of Decision in 1996.

Mr. Frelinghuysen. Will the final recommendations of the Navigator study be accepted as stated or will additional factors be applied to the outcome?

Dr. Reis. As indicated above, along with study determinations, the Department continues coordinated work with the Department of Defense on requirements, and the PEIS process will evaluate the environmental impacts of the alternative to meet those requirements.

UNDERGROUND CONTAINED BURN PROJECT

Mr. Rogers. Dr. Reis, the Underground Contained Burn Project will demonstrate the use of tunnels at the Nevada Test Site (NTS) for the demilitarization of non-nuclear high energetic explosives and conventional ammunition. FY 1994 and FY 1995 funds for the Underground Contained Burn Project at NTS are being transferred from the Department of Defense, by March 31, 1995, subject to agreement over details of the project. What details remain to be resolved?

What are DOE's plans for starting the project on March 31?

Dr. Reis. We do not see any problems at the present time with this project. The draft statement of work for these activities was received by DOE from the DOD on February 27, 1995. After our review, we have scheduled a meeting with DOD to finalize the statement and develop cost estimates. Visits to the Nevada Test Site by DOD personnel are also planned. We see no obstacles to beginning the first phase of the project soon.

WEAPONS ACTIVITIES

Ms. Vucanovich. Dr. Reis, the Underground Contained Burn Project will demonstrate the use of tunnels at the Nevada Test Site (NTS) for the demilitarization of non-nuclear high energetic explosives and conventional ammunition. FY 1994 and FY 1995 funds for the Underground Contained Burn Project at NTS are being transferred from the Department of Defense, by March 31, 1995, subject to agreement over details of the project. What details remain to be resolved? What are DOE's plans for starting the project on March 31?

Dr. Reis. The draft statement of work for these activities was received by DOE from the Department of Defense (DOD) on February 27, 1995. We do not see any problems at the present time with the Underground Contained Burn Project. After our review, we have scheduled a meeting with DOD to finalize the statement and develop cost estimates. The DOD personnel have planned visits to the Nevada Test Site. We see no obstacles to beginning the first phase of the project soon.

STOCKPILE STEWARDSHIP AND MANAGEMENT PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT

Mr. Chapman. In the implementation of your report on the Stockpile Stewardship and Management Program, will you compare cost-efficiency at each candidate site in reaching your decisions on site preferences for certain future functions?

Dr. Reis. Yes. Cost considerations will play a major role in how we configure the future complex. Affordability will be a key factor in determining our success in reconfiguring the complex.

Mr. Chapman. In doing these comparisons, I assume that DOE will consider that it foresees a vastly reduced assembly and maintenance workload in the future and that DOE will use these reduced workloads in its assumptions for each candidate site?

Dr. Reis. Your assumption is correct. Maintenance of capability and timely responsiveness to emerging needs will outweigh capacity considerations in the complex of the future. Maintenance and surveillance of the enduring stockpile coupled with limited ability to remanufacture existing designs will remain a significant mission responsibility for the foreseeable future.

Mr. Chapman. Would you agree that a capital outlay -- ranging from hundreds of millions to perhaps billions -- would be required at any candidate site to handle the work currently being done at Pantex?

Dr. Reis. No decisions have been made regarding the potential transfer of Pantex Plant functions to another DOE site. A detailed program plan which considers costs, technical risk, and environment, safety, and health risk will be prepared to support any potential relocation decision. Such a decision would be made as a part of the Stockpile Stewardship and Management Programmatic Environmental Impact Statement. Ongoing studies are refining and quantifying potential operations costs savings in order to determine whether such an investment would be cost effective for the government.

Mr. Chapman. Can you comment on necessary environmental remediation costs at these candidate sites? Don't you agree that many sites are far more contaminated than Pantex? Wouldn't they require far more work to prepare them for possible function transfers?

Dr. Reis. DOE is assessing the needed environmental remediation at all of its operating facilities and has incurred environmental obligations at all of the sites that will remain irrespective of a decision to relocate or add to the missions at the site. As such, environmental remediation is not expected to be a decision cost for the government. Necessary environmental remediation at the Pantex Plant is comparable to industrial operating facilities of its age, and this remediation will proceed as cost effectively as possible apart from any potential relocation decision. Clearly some other DOE operating facilities have far worse environmental remediation concerns than the Pantex Plant. Those concerns will be dealt with independent of future relocation decisions.

Mr. Chapman. You are aware of the severe fiscal constraints faced by this Subcommittee and all of Congress. Would you agree that the most important things to consider in making this determination would be cost-effectiveness, efficiency and environmental soundness -- all adding up to lower costs?

Dr. Reis. For the longer term, I do believe that we will achieve a lower cost profile. In the near-term, however, significant financial investments will be needed to provide an assured source of tritium, implement a Science-Based Stockpile Stewardship program without underground nuclear testing, and maintain confidence in the enduring stockpile.

As an addition to your list of factors, I would add mission responsiveness. I believe that any appropriately configured complex will also balance these factors.

Mr. Chapman. Do you agree with the Galvin Report's recommendation that future production should be based on the residual capabilities of Pantex, Los Alamos National Laboratory, and Sandia National Laboratories, and that no further investments in production capability are needed at this time?

Dr. Reis. Many aspects of the Galvin Report are thoughtful. We certainly will consider its recommendations within the context of the Stockpile Stewardship and Management Programmatic Environmental Impact Statement process, which is now underway. Until that process is complete, it would be premature to commit to any particular configuration, option, or investment strategy.

Mr. Chapman. Will you consider the Galvin report's recommendations in making your decisions on the future of the nuclear weapons complex, especially as it relates to stockpile stewardship and management and potential uses of complex sites for fissile materials storage and disposition?

Dr. Reis. The recommendations of the Galvin Report will be appropriately considered in the context of the Stockpile Stewardship and Management and Storage and Disposition of Weapons - Usable Fissile Materials Programmatic Environmental Impact Statements.

Statement of Dr. Victor H. Reis,
Assistant Secretary for
Defense Programs
Department of Energy
FY 1996 Appropriations Hearing

INTRODUCTION

Good morning Mr. Chairman and members of the committee. My name is Victor H. Reis and I am Assistant Secretary of Energy for Defense Programs. My testimony today will support our Fiscal Year 1996 Defense Programs budget request. We are requesting $3.5 billion to provide a safe and reliable enduring nuclear weapons stockpile in the absence of underground nuclear testing.

OVERVIEW

America's security demands a continuing investment in our defense. Nuclear deterrence, an essential part of that investment, has paid extraordinary dividends over the last 45 years. It is an investment that we cannot afford to neglect because of the nuclear dangers we continue to face. As President Clinton stated "we will retain strategic nuclear forces sufficient to deter any future hostile foreign leadership with access to strategic nuclear forces from acting against our vital interests and to convince it that seeking a nuclear advantage would be futile. Therefore, we will continue to maintain nuclear forces of sufficient size and capability to hold at risk a broad range of assets valued by such political and military leaders."

The U.S. nuclear weapons stockpile is undergoing dramatic changes as this Nation has taken steps to reduce the global nuclear danger. Thanks to unprecedented arms control agreements between the United States and the former Soviet Union, nuclear forces are being dramatically reduced. Implementation of the START I and START II protocols will result in a total U.S. nuclear weapons reduction of 79% by the year 2003. The United States has halted the development and production of new nuclear weapons, and has begun closing portions of the weapons complex no longer needed to support the significantly smaller, less diverse stockpile of the future. But the United States still has a duty and obligation to ensure the safety, security, and reliability of the enduring nuclear weapons stockpile. I think that you will agree that the task before the Department of Energy and its laboratories is extraordinarily difficult even in this world of fewer nuclear weapons.

In the past, our confidence in the stockpile was ensured through weapon research and development in the laboratories and underground nuclear testing at the Nevada Test Site. In July 1993, the President announced a moratorium on underground nuclear testing that has now been extended until September 1996. No U.S. tests have been conducted since October 1992. The

President has challenged the Department "to explore other means of maintaining our confidence in the safety, reliability and performance of our own weapons." The President also directed that "the plan include stockpile surveillance; experimental research, development and engineering programs; and the maintenance of a production capability to support these efforts." This challenge was codified when the Congress passed the FY 1994 National Defense Authorization Act that directed the Secretary of Energy "to establish a stewardship program to ensure the preservation of the core intellectual and technical competencies of the United States in nuclear weapons." It was also substantiated in the Department of Defense's Nuclear Posture Review, completed in October 1994.

These directives, coupled with extremely tight budgets for the foreseeable future, define the future for Defense Programs and thus shape the new, post Cold War program. Defense Programs is charged to deliver:

- A high confidence, affordable, reliable, safe and secure enduring stockpile of sufficient size and scope to ensure deterrence, while simultaneously supporting U.S. arms control and non-proliferation policy. Because the stockpile must endure, we require

- A smaller, more cost-effective production complex to replace the stockpile when needed, including limited life components and tritium. And because the world is uncertain, we need the

- Ability to reconstitute test and production.

The science and technology base, which is primarily resident in the three weapons laboratories; Lawrence Livermore, Los Alamos, and Sandia National Laboratories, is the key to delivering these products. Because the health of the weapons and the vitality of the weapons laboratories are highly correlated, maintaining laboratory competence in all aspects of nuclear weapons is one of Defense Programs' highest priorities.

The current stockpile is safe, secure, and reliable. However the history of the stockpile has shown that continuous surveillance, repair, and replacement of components and subsystems is commonplace. In fact, the seven weapons that will be in the enduring START II stockpile have already been retrofitted to varying degrees and some have had major components of the nuclear system replaced. Of the weapons types introduced since 1970, nearly one-half have required post-development nuclear testing to verify, resolve or fix problems related to safety or reliability. We cannot predict with any certainty when such problems will arise in the future, but we expect that as the stockpile ages beyond its intended lifetime, these types of problems will become more commonplace.

The program, at its most fundamental level, will provide the capability to respond to any problem concerning the safety or reliability of the stockpile in a timely manner by maintaining the necessary skill and judgement bases. At the core, the program will focus on: monitoring the stockpile;

evaluating problems; repairing, modifying, certifying, and recertifying safety and component performance; as well as full system performance and providing for future manufacturing options. We must develop a new approach that does not rely on nuclear testing to ensure our long-term confidence in the safety, security and reliability of the stockpile. This approach will include a revalidation strategy that allows for the continued certification of the safety, security, and reliability of the stockpile through the requalification of weapons components or certifying rebuilt components. The program will require the upgrade of existing facilities and construction of some new facilities that have applications in scientific research, in strengthening the scientific understanding of the weapons physics, and in the maintenance of material and component supply bases.

Basic to the program is the need for improved scientific understanding of age-related changes that might affect system safety or performance, and the ability to respond to new requirements. Improved understanding of warhead behavior over time will be obtained from computer simulations and analyses benchmarked against past data and new, more comprehensive diagnostic information obtained from appropriate laboratory experiments. An improved scientific understanding of the behavior of nuclear weapons will allow our scientists and engineers to have a better basis for anticipating, identifying and solving new problems or to remedy defects that may occur in the enduring stockpile as it ages. This approach will allow the United States to maintain confidence in the stockpile during a nuclear test ban, in a manner consistent with our non-proliferation objectives and arms control commitments.

Another basic principle is the need to cost effectively maintain a limited capability to manufacture nuclear weapons even though no new weapons are being produced and some production facilities are being closed. This will require a fundamental restructuring of our engineering and production practices.

Implementing these principles will transform the nuclear weapons complex from capacity-based to capability-based. The new enterprise will rely more on scientific understanding and manufacturing agility than test empiricism and manufacturing capacity. The weapons laboratories must assume more responsibility for production capability in addition to their responsibilities for scientific understanding. Having a capability of creating a larger stockpile in an emergency could permit the U.S. to further reduce its active stockpile if international conditions so warrant.

To reach the program envisioned, and be consistent with congressional direction, the Department has restructured the weapons activities account into two closely related and interdependent programs --Stockpile Stewardship and Stockpile Management.

STOCKPILE STEWARDSHIP

The Stockpile Stewardship program will provide scientific and technical support and the knowledge base for management of the stockpile. Specifically, the program must: 1) develop the means to ensure confidence in the safety and performance of the stockpile without testing; 2) maintain the safety, security, reliability of the stockpile and ensure the capability to replace weapons and weapons components in a timely and cost-effective manner; 3) maintain the nuclear weapons knowledge and skill bases at the three weapons laboratories; 4) provide a sufficient scientific understanding of the principles that underpin the safety and performance of nuclear weapons; 5) fill critical gaps in knowledge about age-related changes that might affect weapons system safety, reliability or performance; and 6) ensure the capability to resume nuclear testing and enlarge the stockpile if directed to do so by the President.

To meet the objectives of the Stockpile Stewardship program we have identified three major new initiatives for Fiscal Year 1996.

1) New experimental facilities and advanced hydrodynamic testing capabilities: These new facilities and capabilities would improve our understanding of the underlying physics of nuclear weapons, acquire new data and add it to existing data bases, and test and evaluate computer modeling that will provide the future basis for ensuring safety, reliability, and performance of nuclear components. The most important new facility is the National Ignition Facility (NIF).

The NIF will simulate, on a very small scale, the extraordinary temperatures and pressures that occur during the detonation of a nuclear weapon. NIF will have 192 laser beams which will produce about 500 trillion watts of energy for 3 billionths of a second. The light from the laser beams will be focused onto a tiny target, about the size of a ball bearing, filled with isotopes of hydrogen. The laser light will compress to pressures greater than 100 billion times earth's atmosphere and heat to temperatures of 100 million degrees the hydrogen isotopes to produce fusion reactions. Understanding and controlling fusion in NIF's laboratory setting will greatly enhance our studies of the physics of nuclear weapons by verifying predictions of extremely complex computer models. NIF will help us improve our ability to evaluate problems in the secondaries, make the necessary repairs/modifications and subsequently evaluate and recertify those nuclear components. The challenges and research opportunities will make the NIF a powerful draw for world-class scientists and engineers, thus helping ensure that the Nation's continuing national security challenges will be addressed by experts second to none.

Last year the Secretary approved Key Decision-1 (KD-1) for the NIF project. As a result of that decision, the FY 1996 budget requests a total of $61 million for Title I design activities and related operating expenses. The Secretary also established a new project milestone, KD-1 Prime. The principal focus of the new milestone will be to resolve the issue of whether or not the NIF will aid or hinder U.S. nonproliferation objectives. The Secretary is expected to make a KD-1 Prime decision this summer.

Advanced Hydrodynamic Testing Capabilities provide the closest non-nuclear simulation of the operation of the primary in a nuclear weapon. The primary is one of the most crucial, and complex parts of every nuclear weapon. Its properties are central to safety as well as reliability and performance. If the primary does not work, nothing nuclear happens. If the primary's yield is too low the secondary will not perform. Advanced hydrodynamic experiments capabilities are crucial to resolve issues associated with weapons safety and aging and can provide benchmarks for computer code calibration. One alternative for meeting our testing requirements is the Dual-Axis Radiographic Hydrodynamic Test Facility (DARHT), under consideration at Los Alamos. The construction of the DARHT has been halted by court action and may be resumed upon completion of an environmental impact statement and the issuance of a record of decision by the Department. Funding of $16 million is included in the FY 1996 budget for advanced hydrodynamic testing capabilities.

2) Revolutionary improvements in computer capabilities: This challenge will be met through the Accelerated Strategic Computing Initiative (ASCI). The FY 1996 budget includes $45 million to support this initiative. Without underground testing, numerical simulation and computer modeling will be the principal means of recertifying the safety and performance of nuclear primaries and secondaries, predicting full-system behavior, and validating reliability. This initiative will create the leading-edge computational modeling and simulation capabilities critically needed to promptly shift from nuclear test-based methods to computational-based methods for assuring the safety, reliability and performance of the stockpile. Computer models of manufacturing processes are also needed to ensure highly reliable component production in small lots and the ability to make replacement components to original specifications for the foreseeable future.

Thousand fold increases in computer speed and data storage capacity are needed. Moreover, new computer software for weapons analysis, referred to as weapon codes, must also be developed to incorporate 3-dimensional geometries, provide higher spatial resolution in critical areas, and eliminate empirical calibrating factors. Increased capabilities are required so that critical data from previous nuclear tests, design and production activities and skills from retiring scientists and engineers can be archived for future use by weapons experts.

The formidable computing requirements of ASCI will drive a move to what is called "massively parallel processing". Massively parallel processing is a revolutionary advance in computer technology that will allow the power of thousands of computers to be simultaneously focused on solving a single problem. Massively parallel computing technology is maturing rapidly. Yet, today's weapons application codes do not exploit this technology. Revising them or developing newer, faster, more capable, and fully validated parallel processing weapons codes will require years of sustained research and development. ASCI will also require that trained scientists and engineers be given access to the latest information management systems, weapons data banks, data storage systems, networks and graphics systems for analyzing and interpreting virtual tests and computer simulations.

3) New stockpile surveillance capabilities: To certify the stockpile in the future we will have to depend on better surveillance tools, scientific data, and computer modeling. With the smaller, aging, less diverse stockpile of the future, these capabilities are essential. We will develop ways to prevent common-mode failure that could jeopardize a significant portion of the stockpile. We must measure the degradation of safety and reliability as weapons age beyond their design lifetime

and beyond our experience. The effects of aging include cracks and voids in heavy metals, salts, and high explosives; stress and failures in welded parts; and surface bonding problems. New nondestructive surveillance techniques must be developed to improve our understanding of weapons aging and remanufacture. A high priority initiative for stockpile surveillance is advanced noninvasive imaging by using x-rays or neutrons to examine the internal components of nuclear weapons without disassembly. Fast neutron radiography is one of the new surveillance tools to be tested at the Los Alamos Neutron Scattering Center (LANSCE).

LANSCE will allow our weapons scientists and engineers to develop an improved scientific understanding of weapons design and weapons materials behavior. These data, coupled with improved comutational models form part of the basis for weapons certification without nuclear testing. The FY 1996 budget includes $25 million for conducting these activities at the Los Alamos Neutron Scattering Center (LANSCE),

Testing

President Clinton has instructed the Department of Energy to maintain, as a contingency, the capability to resume underground testing. Our FY 1996 budget includes $206 million, a decrease of $11 million from FY 1995 (as adjusted), to provide for this requirement. Ongoing and planned non-nuclear experiments in support of stockpile stewardship and other programs will provide the necessary technical expertise to resume underground testing if so directed by the President. In addition, there are no plans to conduct hydronuclear experiments during FY 1996 unless directed by the President.

On March 1, 1995, the Department conducted the Kismet experiment. Kismet, is part of an ongoing program designed to maintain the Site' technical expertise. The experiment was composed of an high explosives package of about 50 pounds of TNT containing an inert heavy metal material. The principle question answered by the experiment was how aerosolized material migrate into the surrounding soil. Various diagnostics tools were used to determine the pressures and temperatures achieved during the high explosives detonation and burn. These techniques may be instrumental in future diagnostic work related to stockpile stewardship.

STOCKPILE MANAGEMENT

The most important new activity within the Stockpile Management program is initiation of work on a new tritium production source. An integral part of ensuring confidence in the stockpile is providing an adequate supply of tritium, a radioactive gas used in all U.S. nuclear weapons. Tritium greatly increases the explosive force of the warhead. Tritium however has a radioactive half life of 12 years, and must be replenished periodically in order for the weapons to work as designed. The United States has not produced any tritium since 1988, and currently has no production source for this important material. Based on a stockpile consistent with the START II agreement, the United States will need to have new tritium by about 2011 in order to meet requirements, including the need for a 5 year reserve supply. During the interim the United States will rely on tritium recycling to meet our requirements.

Based on changes in stockpile requirements, budget constraints and public comment, the Department announced October 28, 1994, that it would separate the Reconfiguration Programmatic Environmental Impact Statements (PEIS) into two PEISs: a Tritium Supply and Recycling PEIS and a Stockpile Stewardship and Management PEIS. The Department is now proceeding with the Tritium Supply and Recycling PEIS while developing the framework and alternatives to be studied in the Stockpile Stewardship and Management PEIS. The PEIS analyzes four different technologies for a new facility: Accelerator Production of Tritium (APT), an Advanced Light Water Reactor (ALWR), a Heavy Water Reactor (HWR), and a Modular High Temperature Gas-Cooled Reactor (MHTGR). All four new tritium supply technologies, as well as existing reactors, will be capable of meeting the 2011 date for new tritium and all could meet the required quantities. The candidate sites under consideration for the new tritium facility include: the Idaho National Engineering Laboratory, the Nevada Test Site, the Oak Ridge Reservation, the Pantex Plant and the Savannah River Site. The draft PEIS has been published for public review and comment. The PEIS includes an analysis of the so-called triple play reactor -- a reactor that can produce tritium and generate electricity while "burning" plutonium. The PEIS also discusses the environmental impacts of using an existing commercial reactor to make tritium, whether as a contingency in the event of a national emergency or should the Department choose to purchase such a reactor and convert it to defense purposes. The Department does not have a preferred alternative at this time for tritium supply or recycling sites, or for tritium supply technology however a preferred alterative may be announced prior to completion of the Final PEIS. The Department will hold public hearings in Washington, D.C. and at potentially affected sites in April, and will issue a final PEIS in October 1995. A Record of Decision is expected in November 1995.

The Stockpile Management program is also responsible for the hands on, day-to-day functions and operations involved in maintaining the enduring nuclear weapons stockpile. The core activities of this program include production of operational spares, logistic spares, quality assurance and reliability testing, and weapon repair, retrofit, modifications and conversions. In this regard, reuse and requalification of components, especially nuclear components will be one of the ways explored to reduce program costs. The Stockpile Management program is also responsible for the transport and storage of nuclear weapons and nuclear materials and for the dismantlement of retired weapons and safe storage or disposal of the resulting materials. Consistent with our commitment to the Department of Defense to support the stockpile of nuclear weapons, the FY 1996 budget request will allow us to deliver the following products and services: conducting 100 destructive and nondestructive tests of weapons components; delivering 711 limited life component kits to the Department of Defense, and filling and replacing 1,000 tritium reservoirs; and dismantling nuclear warheads. The program provides support for the military on routine field maintenance operations as well as radiological/nuclear accident response capabilities. These functions must be provided as long as the United States relies on nuclear weapons for deterrence. In carrying out these functions the Stockpile Management program depends upon the Stockpile Stewardship program for technical support in all aspects of its work.

Dismantlement is another important activity within the Stockpile Management account. Since the end of World War II, the Department and its predecessors have disassembled some 50,000 nuclear warheads in a safe, secure, and efficient manner. Since the beginning of the current fiscal year we have dismantled 768 warheads, and expect to complete about 1400 total for FY 1995. In FY 1996, Defense Programs will continue the safe dismantlement of approximately 2070 nuclear warheads at the Pantex Plant. Unlike the mission workload at most other weapons complex sites, the Pantex workload is expected to remain stable for the next several years as we reduce to the START II nuclear stockpile. Disassembly (like assembly) of a nuclear device is a very exacting procedure and is conducted in a controlled environment under strict supervision. Following disassembly, the plutonium and uranium components must be retained in controlled storage or configured in a transparent condition for arms control and nonproliferation purposes.

Another activity carried out in Stockpile Management is reconfiguration which is limited to nonnuclear consolidation activities in FY 1996. The Department is consolidating most nonnuclear activities to the Kansas City Plant with a few activities assigned to the Los Alamos and Sandia National Laboratories to preserve technology. The defense mission at the Rocky Flats, Mound, and Pinellas Plants have ceased. Consolidation will maintain key nonnuclear production capabilities and when completed will result in substantial savings in operating costs.

FISCAL YEAR 1996 BUDGET SUMMARY

The following discussion provides a summary description of the Defense Programs budget requirements in the Weapons Activities appropriations account. The request of $3.6 billion, reflecting our total obligational authority requirements, is allocated among three major program areas: Stockpile Stewardship ($1.6 billion); Stockpile Management ($1.9 billion); and Program Direction ($0.1 billion). When adjustments are made for the use of prior-year unobligated balances ($86 million) and the application of cost savings ($25 million), the total new obligational authority required is reduced to $3.5 billion. This represents an 8% increase over our FY 1995 budget.

DEFENSE PROGRAMS
FY 1996 CONGRESSIONAL BUDGET
($'s IN MILLIONS)

	FY 1994	FY 1995	FY 1996
Stockpile Stewardship			
Core Stockpile Stewardship	$1,215	$1,045	$1,110
Inertial Confinement Fusion	185	176	241
Technology Transfer & Education	238	236	249
NIS Industrial Partnering Program	35	0	0
Subtotal	$1,673	$1,457	$1,600
Stockpile Management			
Core Stockpile Management	$1,535	$1,433	$1,556
Radiological/Nuc. Accident Response	65	69	71
Reconfiguration	160	152	121
Tritium Source	0	0	50
Materials Surveillance & Tech Support	122	103	106
Subtotal	$1,882	$1,757	$1,904
Program Direction	$162	$141	$117
Weapons Activities (Total Obligational Authority)	$3,717	$3,356	$3,621
Adjustments:			
Use of Prior-Year Balances	(451)	(143)	(86)
"Reinventing Government" Savings	0	0	(25)
Weapons Activities (New Obligational Authority)	$3,266	$3,213	$3,509

STOCKPILE STEWARDSHIP REQUIREMENTS

The FY 1996 funding request for the Stockpile Stewardship program is $143 million above the FY 1995 comparable appropriation. The growth supports a number of new initiatives required to maintain confidence in the stockpile without the use of underground nuclear testing as discussed earlier.

Core Stockpile Stewardship is requesting an increase of $65 million (6 percent) above the FY 1995 appropriation. This increase is a result of providing the funding for the Accelerated Strategic Computing Initiative and the Los Alamos Neutron Scattering Center as discussed previously.

The FY 1996 request includes first year funding for three programmatic construction line items and for two new starts in the ongoing effort to maintain the laboratories infrastructure. Funding of $ 1.8 million (total estimated cost of $46 million) is requested for the Processing and Environmental Technology Laboratory which will provide Sandia National Laboratory with a facility in which to investigate the development, characterization, and application of modern processing methods that significantly reduce the risk to the environment, public and plant personnel and are appropriate for smaller production capacity. Funding of $6.6 million (total estimated cost of $48 million) is requested for the Flash X-Ray (FXR) Facility at Lawrence Livermore National Laboratory to enhance the facility with a Contained Firing Facility. The Contained Firing Facility will enclose the test bed of the FXR as a preventive measure to protect the environment surrounding the facility and to reduce visual and auditory impact of operations on encroaching residential areas. Funding of $8.4 million (total estimated cost of $43 million) is requested for ATLAS which will provide the Los Alamos National Laboratory with enhanced pulsed power experimental capability to support above ground experiments required to provide some kinds of data no longer available from underground nuclear testing. The Department also proposes to initiate two new infrastructure projects at Los Alamos National Laboratory: Water Well Replacement and Fire Protection Improvements. Funding of $2.5 million (total estimated cost of $34 million) is requested for the two projects, which are included in the Weapons Stockpile Stewardship Facilities Revitalization, Phase VI, construction line item. These increases for new projects are offset by the completion of other ongoing projects.

The Inertial Confinement Fusion (ICF) request of $241 million, an increase of $64.2 million over the FY 1995 level, accommodates the first year funding for the National Ignition Facility. FY 1996, construction funding of $37 million provides for Title I design and operating expenses of $24 million support advanced conceptual design, environmental/NEPA documentation, and manufacturing readiness. The NIF has a total estimated cost of $843 million. The ICF base program of glass and gas laser and pulse power development continues to support the primary ICF mission of achieving controlled thermonuclear fusion in the laboratory. The funding request also reflects the completion of the OMEGA laser upgrade and the first full year of operation in FY 1996.

The request for Technology Transfer & Education is funded at the FY 1995 level plus an additional $15 million provided within Technology Transfer for the President's Partnership for a New Generation Vehicle initiative. Activities under the Technology Transfer program support ongoing cooperative activities with the private sector, but a new focus is provided to ensure dual-benefit projects directly support the core competencies at the weapons laboratories and the research and development needs of the Accelerated Strategic Computing Initiative and advanced design and production technology efforts. Other Presidential and Secretarial commitments, such as the National Information Infrastructure, the High Performance Computing Initiative, the American Textile Partnership, the Semiconductor Modeling Center, and the Healthcare Industries Initiative are also supported. The Education initiatives support crosscutting science education activities ranging from kindergarten to graduate school. The program supports the Defense Programs mission through collaborative programs to leverage the unique sources of our national laboratories and facilities to support science and math education through teacher/faculty enhancement, curriculum improvement, systematic change, student support, Historically Black Colleges and Universities and minority institutions.

STOCKPILE MANAGEMENT REQUIREMENTS

The Stockpile Management program budget request (formerly Stockpile Support) now encompasses five major activities. They are: 1) Core Stockpile Management; 2) Reconfiguration which is now limited to the consolidation of the nonnuclear weapons complex manufacturing activities and technologies; 3) the totality of the Radiological/Nuclear Accident Response Program (formerly named Emergency Response) previously split funded between the Weapons Stockpile Support and Research and Development Programs; 4) the initiative for a Tritium Source; and 5) the Materials Surveillance and Technical Support Program (formerly part of the now discontinued Materials Support Program).

The combining of these activities into one decision unit is based on changes in mission assignments and emphasis, the interrelationship of efforts including providing the flexibility necessary to maintain the enduring stockpile. The combining of these activities also reflects the curtailment and/or cessation of Defense Programs activities at the Savannah River, Mound, Pinellas, and Rocky Flats sites as well as the turnover/pending turnover of landlord responsibilities for these sites to the Office of Environmental Restoration and Waste Management.

The FY 1996 request for Core Stockpile Management reflects a 9% increase over the FY 1995 level and provides for continuation of traditional objectives of this program including the maintenance, evaluation, modification, improvement, and dismantlement of warheads, bombs and shells in accordance with the Nuclear Weapons Stockpile Plan and the following new initiatives: engineering/procurement and fabrication of plutonium pit storage containers, the development of an improved tritium reservoir, and three new construction starts: 96-D-122 Sewage Treatment Upgrade at the Pantex Plant, 96-D-123 Retrofit Chillers at the Y-12 Plant, and 88-D-122-410 Facilities Capability Assurance Program-Replace Cooling Tower East at the Kansas City Plant.

The FY 1996 request for Radiological/Nuclear Accident Response reflects a moderate increase of 3% over the FY 1995 level to ensure the maintenance of the Department's technical and operational capabilities for responding to radiological accidents/incidents worldwide. It also provides for the initiation of construction of the Washington Aerial Measurements Operations Facility at the Andrews Air Force Base in Maryland, which will provide a secure two-story replacement facility to house personnel and equipment in support of this program.

The FY 1996 request for Reconfiguration supports only the consolidation of nonnuclear manufacturing activities; all other former Reconfiguration activities have been discontinued or moved to other Departmental program elements. This request is reflective of the narrowed programmatic focus, decreasing by approximately 20% below the FY 1995 level, and is consistent with the schedules established for consolidating nonnuclear manufacturing activities previously conducted at the Mound, Pinellas and Rocky Flats Plants.

Funding of $50 million is requested to support implementation of the Secretarial Record of Decision (ROD) associated with the Tritium Supply and Recycling Programmatic Environmental Impact Statement scheduled for November 1995. This funding will be used to initiate a project to provide a new assured tritium source, either a reactor or an accelerator; a Project Office to manage implementation of the ROD; and may be used to initiate a light water tritium target development program to protect the contingency option of using existing light water reactors to make tritium, in the event of a national emergency.

The budget request provides for escalation over the FY 1995 level to support ongoing materials processing and recovery activities at Oak Ridge facilities; and materials surveillance and disposition activities at former Defense Programs sites including Fernald, Hanford, and Idaho National Engineering Laboratory.

PROGRAM DIRECTION REQUIREMENTS

The Weapons Program Direction provides funds for personnel-related expenses, capital equipment, and contractual services for Defense Programs offices at DOE Headquarters and three Operations Offices: Albuquerque, Nevada, and Oakland. The statutory Community Assistance Program for Los Alamos, New Mexico, is also funded from this account. The Defense Programs portion of funding for FY 1996 is $25 million below the FY 1995 appropriation. A reduction of $18 million is attributable to the assignment of responsibility for the Capital Asset Management Process and Condition Assessment Survey (CAMP/CAS) program to the applicable program areas. The remainder is due to downsizing of the Federal staff and contractual support services.

ADJUSTMENTS TO REDUCE NEW FUNDING REQUIREMENTS

The budget request reflects $111 million in offsets for new obligational authority. The budget assumes that at least $25 million in cost savings will be achieved through contracting and procurement reforms and streamlining efficiencies as part of the Department's effort to reinvent government. Another $86 million is projected to be made available from funding appropriated in prior years. Prior year balances have been drawn down over the past several years as funding reductions have caught up with the programmatic reductions that responded more quickly to the end of the Cold War. Because of these adjustments, the level of these balances at the beginning of FY 1996 is projected to be the minimum necessary to preserve ongoing operations from one fiscal year to the next.

CONCLUSION

While the world has witnessed enormous changes over the last few years, nuclear weapons are still expected to provide their deterrence contributions to U.S. national security. Our continuing reliance on a nuclear deterrent requires that we have high confidence in their safety, security, and reliability. Maintaining that confidence is the most important and challenging task before the Department. No longer can we rely on underground nuclear testing and a continuous stream of development and production engineering projects. In the future, our confidence will be based on maintaining the vitality of the unique scientific and engineering skills of the Department and its weapons laboratories. To preserve and expand this resource, we have initiated the Stockpile Stewardship program. It is a major scientific challenge. We are just beginning to understand the complexity of the challenge before us and to devise the means to meet it. We are confident that the program outlined above will allow the Department, even a decade or more from now, to ensure that the stockpile is safe, secure, reliable and effective. We also expect that the program will help us attract and retain the high-caliber of people across a broad spectrum of scientific and engineering disciplines required to maintain this Nation's nuclear deterrent.

Statement by Dr. Harold P. Smith, Jr.,
Assistant to the Secretary of Defense (Atomic Energy)
before the
House Energy and Water Development Appropriations Subcommittee
March 15, 1995

Introduction

Mr. Chairman and members of the Subcommittee, I am honored and delighted to have this opportunity to appear before you again. My remarks will focus on the relationship between the Departments of Energy and Defense in meeting our shared responsibility for the continued safety, security, and reliability of our nuclear weapons stockpile. This stewardship responsibility is particularly challenging since the nuclear weapons of our enduring stockpile will be retained in the inventory well beyond their designed lifetimes. Given this reality, I accord nuclear weapon safety, security, and reliability the highest priority. I am pleased to report that the Defense Department and Energy Department are working hand-in-glove in executing our shared responsibility.

The Nuclear Posture Review

As the starting point for my remarks, I would like to comment on the requirement for an enduring nuclear stockpile. Why do we need nuclear weapons at all in the future? This question was the starting point for a lengthy, zero-based, major review of the nation's future nuclear weapons requirements, the Nuclear Posture Review or NPR. This review was the first such comprehensive review in fifteen years. Completed this past September and approved by the President, the NPR provides the policy guidance, force structure requirements, and stewardship obligations for the enduring nuclear weapons stockpile. In effect, the Nuclear Posture Review was the nuclear companion to the Defense Department's Bottom Up Review which guides the conventional component of our national security strategy.

The NPR recognized that the size and posture of the US Cold War nuclear deterrent is excessive to future security challenges. However, in a world of uncertainty and still evolving security needs, the NPR concluded that nuclear weapons -- and nuclear deterrence -- will remain an essential element of US national security. However, the size, form, and context of that deterrent is significantly different from that which served us so well during the Cold War.

First, the NPR sought to achieve a proper balance between what Secretary Perry has called "leading and hedging." By this, he means providing the leadership for continuing reductions in nuclear weapons while at the same time retaining the ability to respond to the emergence of a new nuclear threat, including a possible reversal of trends in Russia, a nation that currently has over 25,000 nuclear weapons. A credible US nuclear deterrent also serves us and our Allies and friends by discouraging the use of weapons of mass destruction developed or otherwise obtained by regional aggressors.

The force structure resulting from the NPR is significantly reduced from that of the Cold War. This force structure will be comprised of 14 Trident ballistic missile submarines, 66 B-52 and 20 B-2 bombers, and three wings of Minuteman III ICBMs with each missile downloaded to a single-warhead. Dual-capable aircraft are being maintained only in Europe and the United States. Regarding naval non-strategic nuclear weapons, all that will be retained is the capability to deploy nuclear-armed land-attack Tomahawk missiles on nuclear-powered attack submarines.

This equates to a 47 percent reduction in active strategic warheads and a 90 percent reduction in active non-strategic warheads from the 1988 level. Overall, compared to 1988, the total active stockpile has been reduced by 59 percent. This reduction will reach 79 percent by 2003.

Second, the NPR focused heavily upon improved safety and security for the residual nuclear force. In addition to reducing the sheer size of the active nuclear inventory, a number of additional actions have been or are being taken to improve nuclear safety, security, and use control. For example, no nuclear weapons remain in the custody of US ground combat forces. Non-strategic nuclear weapons are no longer deployed at sea. Strategic bombers remain off day-to-day alert. Furthermore, nuclear weapons storage locations have been reduced by 75 percent and personnel with access to nuclear weapons or their control have been reduced by 70 percent.

The NPR also directs the Departments of Defense and Energy to maintain nuclear weapon capability without underground nuclear testing and without the production of fissile material. Specifically, it directs the development of a stockpile surveillance engineering base; retention of the capability to refabricate and certify weapon types in the enduring stockpile; maintenance of the capability to design, fabricate, and certify new nuclear warheads should that prove necessary; and maintenance of the requisite supporting science and technology base.

Meeting the Challenge

To meet these challenges, the Department of Defense, in partnership with the Department of Energy, must address three basic issues. First, how does DoD, as the customer, determine the requirements and characteristics for the future stockpile? Second, how are these requirements communicated to the supplier, the Department of Energy? Third, how do the two Departments most efficiently maintain that stockpile?

As I already mentioned, the NPR stands as a pivotal document to define DoD's requirements for the stockpile. The NPR defined the outyear force structure requirements and also provided the basis for developing and establishing necessary refurbishment and replacement materials. This in turn established the requirement for a professional cadre of technical nuclear design personnel to ensure that the safety, security, and reliability requirements are met. Furthermore, the NPR requires that this nuclear expertise include the capability to design, fabricate, and certify nuclear warheads in the absence of testing and fissile material production. To support these requirements, a Strategic Reserve of highly enriched uranium, weapons grade plutonium, and tritium must be maintained. The process for ensuring the provision of these essential capabilities is conducted through the Joint DoD/DOE Nuclear Weapons Council.

The Nuclear Weapons Council

The Nuclear Weapons Council is an interdepartmental (DoD and DOE) organization which manages, reviews, and arbitrates nuclear weapons issues relative to the maintenance of a reliable, safe, and secure stockpile and supporting infrastructure. As an interdepartmental organization, the NWC is supported by a wide-range of disciplines: security and safety experts, designers, producers, managers, maintainers, and operators. Membership of the NWC consists of the Deputy Secretary of Defense, Under Secretary of Energy, and the Vice Chairman of the Joint Chiefs.

The Council is supported by the NWC Standing and Safety Committee, which I chair.

A central activity of the NWC is the preparation of the annual Nuclear Weapons Stockpile Memorandum which provides the Defense Department's nuclear weapons requirements to the Energy Department. The Council prepares this document, oversees its implementation, and ensures that national policy is being efficiently executed.

Issues considered and addressed by the NWC this past year include a myriad of detailed questions impinging on the stockpile of today and tomorrow. Among the topics addressed this past year were the impact of declining budgets, the retirement of weapons and weapon types; the long-term storage of fissile material; identification of nuclear materials for International Atomic Energy Agency (IAEA) safeguards, and the impact of mission realignment and base closures. Considerable time and effort was directed toward issues related to the aging of the stockpile. In particular, the Council wrestled with ways to best maintain confidence in individual weapon and collective stockpile safety, security, and reliability.

As an example of a key decision with long-term implications, the Council recently considered alternative source and production programs to ensure a future supply of tritium. The Council concluded that accelerator-based tritium production could meet the needs of the enduring stockpile.

Stockpile Stewardship Program

An additional requirement directed by the Fiscal Year 1994 National Defense Authorization is: "a stewardship program to ensure the preservation of the core intellectual and technical competencies of the United States in Nuclear Weapons." The Department of Energy, with the support and concurrence of the Defense Department, has established the Science Based Stockpile Stewardship Program. This program is designed to retain the capability to design and produce replacement weapons while simultaneously dismantling obsolete weapons under the tightest safety and security provisions. In particular, the Stockpile Stewardship Program will provide improved forensic and diagnostic capabilities.

Independent Assessment

As the stockpile decreases with a concomitant increase in demilitarization requirements, a parallel and critical activity is the technical evaluation of the weapons remaining in the stockpile. The basic elements of such an evaluation are in place in the form of the nuclear competencies of the national laboratories and the DoD. The Stockpile Stewardship Program will build on these centers of nuclear excellence by developing a robust peer review process with both DOE and DoD participation. This peer review process will provide a technically sound structure and methodology to ensure a safe, secure, reliable nuclear weapons stockpile.

Conclusion

I can confidently report today that the stockpile is safe, secure, and reliable. It also meets the requirements of DoD and the Services. The Fiscal Year 1996 budget request provides sufficient funding to meet our responsibilities.

For the future, the combination of the Stockpile Stewardship Program, aggressive stockpile surveillance, and a robust program of independent peer review provides the means to partially offset the loss of nuclear testing. However, without testing, there will be potential for erosion in the degree of confidence in the individual and collective characteristics of the stockpile. Maintaining confidence will be challenging in such an environment but I believe that we are on the right track to address this critical issue.

Since the Manhattan Project, the nation has invested heavily in the development, production, deployment, and maintenance of the national nuclear deterrent. Nuclear weapons, even at significantly reduced levels, remain a core component of future national security strategy. Proper stewardship is, therefore, an enduring responsibility. It is imperative that the nation continue to provide the resources to fulfill this responsibility.

Mr. Chairman, this concludes my statement. I hope that I have been responsive to your needs. I would be pleased to answer your questions and those of your colleagues.

STATEMENT OF KENNETH E. BAKER
ACTING DIRECTOR
OFFICE OF NONPROLIFERATION AND NATIONAL SECURITY
DEPARTMENT OF ENERGY
FY 1996 APPROPRIATIONS HEARINGS

15 MARCH 1995

Statement of Kenneth E. Baker
Acting Director
Office of Nonproliferation and National Security
Department of Energy
FY 1996 Appropriations Hearings

Good morning Mr. Chairman and Members of the subcommittee. It is a pleasure to address you today as the Acting Director of the Office of Nonproliferation and National Security at the Department of Energy (DOE).

The Department has long been actively involved in preventing proliferation of nuclear weapons technology and protecting nuclear material and facilities. Moreover, in the post-Cold War era, the Department and its system of national laboratories have conducted a vigorous program of nonproliferation research and development with direct benefit to countering the threat of proliferation.

This office oversees the unique capabilities that support a core program of nuclear nonproliferation activities even as we make efficient use of our unique technical capability to support and develop advanced technologies aiding in the detection and countering emerging proliferation threats. Consequently, this office provides a wide range of services for a broad range of domestic constituencies and nonproliferation regimes.

The challenges are clear: the collapse of the Soviet Union has offered new potential for nuclear transparency and verified reductions, while at the same time raising real concerns about where their former weapons scientists will be employed and over the adequacy of security of their nuclear materials; managing the nuclear heritages of others of the Newly Independent States, such as Kazakhstan and Ukraine; Iraq and North Korea; and concerns over terrorism, perhaps involving stolen fissile materials.

The programs of the Office of Nonproliferation and National Security address these and other threats. President Clinton has made the nonproliferation of nuclear weapons one of the Nation's highest priorities. The United States is committed to weave this element of our policy more deeply within the fabric of our relationships with the world's nations and institutions. As the preeminent agency for providing technological and analytical support to guard against the spread of nuclear weapons and weapons-usable materials, the Department of Energy is a major participant in our federal and international nonproliferation efforts.

Today, I would like to focus on three key areas that address aspects of the mission and threats discussed above: reducing the global nuclear danger; providing effective, cost-efficient safeguards and security of the Departmental complex while fostering public trust through openness; and improving the Department's emergency response capability. In addition to meeting national security requirements, the office also is a vital contributor to the Department's science and technology, environmental quality, energy resources, and industrial competitiveness missions of the Department, all of which directly affect the security and quality of life of every American.

The fiscal year 1996 request for nonproliferation and national security activities is $573.7 million, less an offset of $13 million of prior year balances for a net FY 1996 Congressional Budget Request of $560.7 million.

Our nonproliferation focus is five-fold: 1) secure nuclear materials in the former Soviet Union; 2) assure safe, secure long-term storage and disposition of surplus fissile materials; 3) establish transparent and irreversible nuclear reductions; 4) strengthen the nuclear nonproliferation regime, and 5) control exports of nuclear technology and materials. The Department's active nuclear nonproliferation program is augmented by aggressive research and development activities, technical and analytical support to treaty development and implementation, and providing timely and customized intelligence to support these efforts.

Over the past year, we have made significant accomplishments in reducing the global nuclear danger:

- We lead a program of cooperation between DOE laboratories and nuclear research facilities in Russia to improve the protection, control, and accounting of nuclear materials which could be used to make nuclear weapons. A demonstration project was successfully undertaken to upgrade and enhance the protection of the Kurchatov Nuclear Research Center in Moscow during 1994 and plans are in place for follow-on demonstrations at several more sites during 1995.

- Project Sapphire, a formerly-secret operation, successfully transferred approximately 600 kilograms of highly enriched uranium from the Ulba Metallurgical Plant in Kazakhstan to the Department's Oak Ridge facility in Tennessee for safe and secure interim storage. By gaining ownership of this material, the United States has effectively removed the material from potential acquisition by those who could develop weapons of mass destruction. The uranium is currently in interim storage at the Y-12 plant in Oak Ridge until it can be moved to a commercial facility where it will be converted to low enriched uranium for use in commercial nuclear power plants in the future.

- We have completed development and deployment of space-based sensors capable of detecting atmospheric and near-Earth nuclear explosions. These sensors, on Defense Department satellites, provide a system for the United States to continuously detect nuclear explosions and verify treaty compliance world-wide.

- During 1994, the responsibility for research and development of technologies to support U.S. requirements to monitor a future Comprehensive Test Ban Treaty (CTBT) was transferred from the Department of Defense to the Department of

Energy (specifically to the Office of Nonproliferation and National Security). We have enlisted four of our National Laboratories -- Livermore, Los Alamos, Sandia, and Pacific Northwest -- to develop technological options for verification of arms control policy.

- We have also been providing, and will continue to provide, technical expertise and policy recommendations in support of diplomatic efforts to achieve an indefinite extension of the Non-Proliferation Treaty, a cornerstone of U.S. national security policy. Our support included development of overall strategy, initiatives for transparency and irreversibility (including placing excess materials under International Atomic Energy Agency safeguards), technical and analytical support to Comprehensive Test Ban Treaty negotiations, and the establishment of nuclear technology programs designed to assist in the fulfillment of U.S. obligations for peaceful nuclear cooperation.

However, with all of these accomplishments, there is still much more to do. In fiscal year 1996, we must accelerate our efforts to protect fissile materials and redirect nuclear expertise in the former Soviet Union to peaceful projects. The Department will expand its efforts to end the civilian production and use of weapons-usable fissile materials through promotion of alternative energy sources, the Reduced Enrichment for Research and Test Reactors (RERTR) Program, and nuclear material purchases. Also in fiscal year 1996, the Department will continue its efforts to monitor U.S. and Russian inventories of plutonium and highly enriched uranium from weapons dismantlement through inspections and other activities that make dismantlement transparent and irreversible.

Among other measures, we will advance nonproliferation: by our efforts in North Korea; by continuing support of negotiations of a Comprehensive Test Ban Treaty and an international fissile material cutoff convention; and by facilitating International Atomic Energy Agency inspections in the United States. Reflecting this need to accelerate our nonproliferation efforts, our budget for fiscal year 1996 is increased by more than $86 million over fiscal year 1995.

Our unique expertise in support of national and international nonproliferation policies is augmented by our efforts to develop more effective, cost-efficient safeguards and security of the DOE complex. Over the past year, we have reduced department-wide safeguards and securities costs by 12 percent through consolidation of sensitive holdings (e.g., nuclear material), elimination of redundancies, effective use of state-of-the-art technology, reduction of security clearances because of the Department's changing missions, and improved safeguards and security planning. All major safeguards and security reductions are subjected to thorough vulnerability analyses to assure that they do not compromise security. We are learning to meet the security challenges of today with less, and are successful in this endeavor.

We are also spearheading the Department's openness initiative, improving the sense of trust held by our customers -- the American people. This includes declassifying information about the department's activities and improving access to the department and its facilities and without compromising national security and consistent with nonproliferation concerns. Last year, we declassified approximately 110,000 pages of previously classified information. We developed an on-line capability for the public to gain access to the Department's declassification actions through the Internet; no longer is the American public left in the dark about what the Department has declassified -- now they have the capability for instant information.

Finally, the Office of Nonproliferation and National Security seeks to improve the Department's emergency response capability. Our primary responsibility in this area is to provide facilities and/or analysis for the management of emergency situations affecting national or regional energy supply and demand, nuclear materials or weapons, or events which threaten DOE facilities or personnel or where DOE assets can contribute to recovery.

The office has recently gained ownership of the Liquified Gaseous Fuels Spill Test Facility which is the only facility in the country authorized to release hazardous materials in the open atmosphere. This facility allows us to improve training to address any accidents at DOE sites and also provide a facility for developing and testing equipment to detect, monitor, and verify proliferant activities of other nations in support of our national goals.

BUDGET REVIEW

The following table summarizes the fiscal year 1996 budget request from the Energy and Water Development Appropriation as compared with the fiscal year 1995 adjusted appropriation (in thousands):

Appropriation/Activity	FY95	FY96	Change
Other Defense Activities			
Nonproliferation and Verification Research and Development	$ 226,037	$ 226,142	$ + 105
Arms Control and Nonproliferation	76,799	162,364	+ 85,565
Intelligence	43,061	42,336	- 725
Nuclear Safeguards and Security	88,816	89,516	+ 700
Security Investigations	33,399	33,247	- 152
SUBTOTAL, OTHER DEFENSE ACTIVITIES	*$ 468,112*	*$ 553,605*	*$ + 85,493*
Emergency Management (Weapons)	17,336	20,056	+ 2,720
SUBTOTAL, ATOMIC ENERGY	*$ 485,448*	*$ 573,661*	*$ + 88,213*
Use of Prior Year Balances	- 11,210	- 13,000	- 1,790
CONGRESSIONAL BUDGET REQUEST	*$ 474,238*	*$ 560,661*	*$ + 86,423*

The Nonproliferation and Verification Research and Development budget request for fiscal year 1996 reflects a slight increase. We recognize that reducing the nuclear danger is a vital interest to the United States and the Department of Energy has a critical role to play in that effort. However, we must balance these duties with the need to reduce government spending -- even on high-priority items such as this. As a result, we have continued to increase the focus of our technology development program on detecting proliferant activities. We are also working toward eliminating duplication of effort between agencies and within DOE, improving coordination between sponsoring agencies, streamlining operations and generating a meaningful cost savings.

Overall, the Arms Control and Nonproliferation budget request increases by $85.6 million, specifically in the following areas: materials protection, control and accounting including cooperative laboratory-to-laboratory and government-to-government programs with Russia for the establishment of effective Russian nuclear material security systems and export controls; cooperations with GAN, the Russian nuclear regulatory agency, to develop a nuclear tracking system; international security commitments of the Administration in the Newly Independent States of the former Soviet Union and in North Korea; the Industrial Partnering Program; development of high-density low enriched uranium fuel; and additional capital equipment for the laboratory-to-laboratory program.

The Intelligence budget request for fiscal year 1996 reflects a modest reduction from the previous year's appropriation. The request will provide for timely, high-impact analysis and reporting on the proliferation implications of selected nuclear weapons states' programs, emerging nuclear proliferants, nuclear suppliers, and global impacts to the U.S. energy security.

The Nuclear Safeguards and Security request shows a slight increase over the fiscal year 1995 appropriation. It reflects modest increases for technical and engineering support to field offices in the implementation of safeguards and security policies and procedures, modernization of automated office support at headquarters, and increased use of emerging technologies for enhancements to physical security and materials control and accountability capabilities which aid in reducing the overall costs of security. The increase also allows for accelerated review of technical classification guidance and additional training for derivative classifiers.

The Security Investigations budget request reflects a slight decrease as a result of reducing the numbers and levels of active security clearances by requiring the employing office to provide full justification for each background investigation requested.

Finally, the Emergency Management budget request for fiscal year 1996 increases by $2.7 million from the previous year. This increase reflects the intra-Departmental transfer of the Liquefied Gaseous Fuels Spill Test Facility and upgrades to the Department's emergency management system.

RECAP

The fiscal year 1996 budget request for the Office of Nonproliferation and National Security is $86.4 million more than our 1995 adjusted appropriation. We have been conscientiously seeking new ways to provide greater services for less cost and believe that we can provide significant value-added programming in a cost-efficient manner. The 1996 request, if granted, will allow the Department of Energy to: improve the application of National Laboratory technical and analytical expertise to meet the nation's nonproliferation requirements; provide efficient, cost-effective safeguards and security; accelerate implementation of the Administration's openness initiatives; and provide integrated and coordinated response to incidents affecting departmental facilities or requiring departmental assistance.

Thank you.

WEDNESDAY, MARCH 15, 1995.

NAVAL REACTORS

WITNESS

ADMIRAL BRUCE DEMARS, DEPUTY ASSISTANT DIRECTOR FOR NAVAL REACTORS

OPENING REMARKS

Mr. MYERS. The committee will come to order, and first, Admiral DeMars, we welcome you back again. We also might say we are in a situation where we have an appropriations bill on the Floor, so from time to time we might possibly have to leave. I think within the hour we probably will have to. I doubt if we can conclude our session this morning in an hour, or this afternoon, maybe possibly we can.

We appreciate you coming an hour earlier to accommodate our schedule. Admiral, the committee has determined that its staff have proper clearance. You can give us the same assurance about the folks you brought?

Admiral DEMARS. Yes, sir.

Mr. MYERS. Your prepared statement will be placed in the record, and you may proceed as you care.

Admiral DEMARS. Thank you. Once again, up front I want to thank you and the rest of the members of the committee for your continuing support over the years. It is the most solid, consistent support the program gets, and I do appreciate that on behalf of the program.

I want to give three messages today and I will summarize them with some charts here. One is that we continue to be primarily focused on the safe operation of our nuclear power plants. That does take the bulk of our resources and our time. We have some other things that possibly look more interesting, such as the model, but it really is the operating plants that get our primary focus.

We are also continuing to aggressively downsize to match the new realities of the defense business, and that continues apace. Finally, this is a critical year for the nuclear submarine industrial base if we get through this year okay, then we will enter an entirely new era. Let me run very briefly through some of this.

NAVAL NUCLEAR PROPULSION TODAY

I won't spend a lot of time on this because you are familiar with the program, and our responsibilities have basically remained the same since last year. We do run 136 reactor plants, which is probably a record for this country, and in the world, if you count the reactor plants that are operating.

The nuclear fleet is still fairly large. Over forty percent of the combatants in the Navy are nuclear-powered. We have responsibility for the shipyards where the reactor servicing is done. We run a training program which prepares about 1,500 people per year—officers and sailors—to man the ships. We have a very specialized industrial base that I will talk about a little later on, and we are just about in the final stages of its realignment to get by with a smaller number of producers. We have two Department of Energy laboratories dedicated solely to work on the program.

They remain relatively small, about 3,000 people each, at each laboratory. We have a field office organization overseeing all these activities that reports back to me what is going on and a relatively small headquarters staff. We have about 400 people in the headquarters, and that counts the person who runs the mail room, and the secretaries, and the engineers, and the procurement people. So it is a fairly lean operation.

NUCLEAR PROPULSION FOR WARSHIPS

Nuclear propulsion for warships remains one of the most revolutionary developments of this century. Clearly, it played a crucial role in the long Cold War, obviously, and this country coming out on top. For our ships, it provided the mobility and the unlimited endurance. We have cores now in a number of our ships that we are building now that will last about 25 years. Of course, the gleam in our eye, and we are working hard—is to have a life of the ship core for a submarine so we never have to refuel it.

So, again, nuclear propulsion provides tremendous mobility and endurance for both submarines and surface ships. For the submarines, it gives them true stealth, by divorcing them from the need to come to the surface. For surface ships, primarily the carriers, it allows them much greater payload both in ordnance and aviation fuel as compared to a conventional carrier. We continue to see carriers exercised very heavily in the sort of uncertain world we are in now. These nuclear-powered aircraft carriers can get somewhere very fast, and when they arrive there, they have much more armament on board than a conventional carrier.

Nuclear propulsion will serve a vital future role with a smaller fleet, obviously, the uncertainty in the world that you know better than I do, and fewer overseas bases. I think nuclear power for the Navy is going to be around for a long time.

NUCLEAR FLEET TODAY VERSUS 2000

The nuclear fleet today, contrasting some numbers here and then just five years from now in the year 2000, will remain about 40 percent of the combatants in the Navy. Although we are getting smaller, so is the rest of the Navy. So we will still be a large part of the fighting part of the Navy.

As I mentioned, we have 136 reactors today in 111 ships. The attack submarine force has 84 ships now, but at the end of the decade, we will have 55 ships. We are coming down very quickly there, and I will talk later about our decommissioning program. Under construction today, we have seven attack submarines. At the end of the decade, there will just be three.

For the Trident submarines, we have 15 now in commission, and we are building three more. At the end of the decade we will just have those 18 ships, with no more building, and that building program ends. Cruisers—we continue to decommission. We have five today. By the end of the decade we will have just two.

Basically, the Navy has chosen not to refuel those cruisers at the end of their core life, which is budgetarily driven and unfortunate. Aircraft carriers—we have seven in operation today, with three more building. By the end of the decade, there will be nine commissioned carriers with one final carrier building, so the bulk of the aircraft carrier fleet today is nuclear-powered and will continue to be.

WORLDWIDE ACCESS

Worldwide access—there are many places we go in the world. Obviously, the green dots on the chart are places we don't go; they are the commercial nuclear power plants throughout the country. We do travel throughout the world and make port calls at all these other places, symbolized by the red dots on the chart.

We do that largely based on confidence in our reputation for the safety with which we run the reactors and our care for civilian populace and the environment, so safety remains a very strong program ethic that we must maintain. We must protect our reputation in order to continue receiving worldwide access. If we weren't able to get in and out of ports, it would affect 40 percent of the combatants in the Navy to a large degree.

100 MILLION MILES STEAMED ON NUCLEAR POWER

As you know, in April of last year we passed 100 million miles steamed safely on nuclear power. We put out a small booklet; it was a large public relation effort for the Naval Nuclear Power Program. It is in your package there. We are very proud of that accomplishment, and obviously we will continue to do that.

ENVIRONMENTAL RECORD

I have shown you this chart before, but I will again. It is very busy, but it contrasts the environmental releases to the air and to the water of all the individual nuclear power plants in this country. If you add up all the facilities and 136 reactors that this program is responsible for, they fit in right there at the low end, as contrasted with these individual reactors.

Part of that is the design of our reactors versus commercial reactors. Part of it is the care with which we run the program, but certainly it shows very dramatically that we have very minimal impact on the environment. All of these releases are well within Federal regulations. None of the commercial power plants is doing anything wrong. It is just we are very, very low in our impact on the environment.

Additionally, if we look at the program's environmental record in total radiation exposure—the blue line here on the chart shows the number of ships that might be in a shipyard availability reactor servicing over the years—it has come down a little bit recently, but the trend has been up.

The green on the chart shows the total accumulated radiation that people in the program were exposed to—all of them limits throughout the years. As you can see, early on radiation exposure started to climb. The program worked very hard on that, drove it down through both administrative and technical means—better chemistry, better materials and so on—to where now the total radiation exposure in the program is very small. That not only is the right way to go, but also pays off in large dollars because there are costs associated with training radiation workers and so on.

There is a similar story for the amount of solid waste that the program develops. This is a plot of the number of ships in the Naval Nuclear Power Program. You see, it started to dip down there fairly dramatically right after I took over. I don't think there is any association there, but we are coming down a little bit, and this is the cubic feet of radioactive waste that we generate.

You probably ought to ask why is it going up here at the end. That is because we are decommissioning some of our one-of-a-kind ships and some of our land-based reactor sites. There is unique refueling equipment associated with that that is contaminated. We had intended to use it again; but, for instance, some of the cruisers are being prematurely retired. We don't need the unique equipment for the TRUXTUN and the BAINBRIDGE so we get that off the burial grounds. So this is coming up now, but should be able to go down once we settle out with a smaller nuclear-powered Navy.

PRIMARY JOB: SUPPORT PLANTS IN OPERATING SHIPS

As I said before, our primary job is to support the plants in the operating ships. The large bulk of our resources, our time, and our energy is to look after those plants because the ships travel worldwide, and we have to be prepared to respond to any problem they have anywhere in the world. We want to keep them safe and reliable. We are working hard to extend the reactor core life and the plant life, and minimize the amount of time and money that goes into a shipyard availability. As I mentioned, our goal is to get a life of the ship core for a submarine and that is the goal in this model I will be showing you in a minute.

Replacing obsolete equipment—obviously some of these plants last 30 years, or 50 years in the case of the aircraft carriers, so technology must move apace. We must stay up with that, and continue to modernize, and we are doing that; we are reducing the maintenance costs and the ship time offline and we continue to improve the plant performance.

It does require, and this is obvious but important to say, continuous analysis and testing. This is largely done at the two Department of Energy labs, to a degree in the shipyards, and by some commercial companies throughout the country. These facilities need to really look hard, monitoring what is going on in the plants and then analyze and test so that we have real results to look at, not just studies or somebody hired to tell us how good or bad things are. They need to really work hard to understand the chemistry, the materials, and the radiation effects on our plants. And of course, fleet downsizing will increase the importance of each ship.

SERVICING NUCLEAR SHIPS

The world hasn't gotten smaller, the Navy has. Ships are going to have to be spread farther across the planet, and so their reliability is much more important than it was in the past.

We have today about 16 plants in major availabilities in four Navy yards. We are also closing, at the same time, two of those Navy yards—Mare Island Shipyard and Charleston Naval Shipyard. We are on track to have them closed from a radiological point in April of next year, about a three-year effort, and both cleanups are proceeding reasonably well, on budget, on schedule. There are some significant challenges—the Barnwell, South Carolina burial ground is closed to the California shipyard and will close to Charleston at the end of this year, I believe, if I have my dates right. We really have to hurry to get all our contaminated equipment, radioactive materiel stuff at Charleston off to that burial ground.

The other challenge was that you have obviously very highly trained, skilled workers at these shipyards, and as you get closer to the end, they are looking for other jobs. So we have used some strategies to try to keep them in, but the government doesn't give you a full bag of incentives to play with, so we have done the best we can, and have managed to hold together a very credible group to do this by borrowing personnel from other shipyards in some cases.

We have shared what we are doing with the communities, in both cases, and the local regulators where appropriate. Everything is reasonably on track, and we can be proud of what we are doing in that area.

DOWNSIZING OF THE FLEET (1990 TO 1999)

One of the post Cold War reductions that is fairly significant is the downsizing of the fleet. The Navy dropped plans for 37 new submarines during the decade of the 1990s. If you add up what that would have cost, that is about $70 billion. The cost avoidance is good from the standpoint of the taxpayers.

If you are someone that is making the parts for these submarines or building them, there is a little different story. We have during this period inactivated 50 nuclear-powered ships, and are going to inactivate 46 more by the end of the decade. We inactivate them, we take the fuel out, send the fuel off to Idaho where it is put in storage pools, cut the reactor compartment out of the submarine, put it on a barge, and take it to the Hanford reservation and it is stored here in a shallow trench.

The reactor compartments are painted up and they are preserved and they will remain there indefinitely. Of course, the radioactivity is decaying away in a very safe and stable position. The rest of the submarine, then, is cut up. Material that is recyclable such as diesel engines and some of the pumps and valves that aren't classified or sensitive material are recycled back into the commercial world. The steel is sold to the smelters and they melt it down and sell it back to the Navy to make more ships. So the only thing that is really left is the hazardous material which is all gathered up segregated.

The only thing really left are the fuel rods out in Idaho and the reactor compartment at Hanford.

This chart shows that since the Cold War, 50 ships have been inactivated, but the total right now is a little over 70 because we did some of them before the Soviets gave up. We have deactivated some 70 nuclear-powered submarines, so we are getting to where we know how to do it pretty well.

RESEARCH AND DEVELOPMENT/TRAINING REACTOR SHUTDOWNS

The other post Cold War reduction is shutting down our research and development and training reactors. This is a picture of the Idaho training complex, and this is a picture of Charleston, with two more training ships, where we have adapted two older submarines to fulfill the training missions that we used to do on land-based reactors. It is cheaper to do it this way. Of course, you are at a disadvantage since you can't do the research and development on these platforms that you can at the land-based sites.

As of six years ago, we had eight land-based reactors. In less than a year from now we will have two research and development and training reactors and two moored training ships, so it has been a fairly massive turnover in the training and research and development focus of the program in a relatively short period of time, but this was purposeful. The land-based reactors were at the end of their lives. They are getting expensive to run, and so they would have had to have been shut down at some point.

We have more than enough training capability in the remaining reactors. Now, we do have to, as we shut these down, we have to remediate them, obviously. We have to take the fuel out, and in some cases dismantle the plant and then ship that off. We are doing that now and in the future, and it will stretch out at least into the next decade. We plan to clean up after ourselves, so that everything will be gone when we are finished.

SUBMARINE CONSTRUCTION

One of the major problems we face now, and I would just like to take a minute to walk you through it—the deciding event of this budget year is how we finally take the final act to move from a high rate of production for nuclear submarines to a low rate of production.

In the decade of the 1980s, thirty-eight nuclear submarines were authorized and appropriated, and most of them are built now. In the next decade, we plan to build one to two per year, low rate production to satisfy a force level that will be about 50 submarines. The force level back in the 1980's was about 100 submarines. So we have to get from there to there, and then, of course, as I said before, we don't think we are going to ever get out of the nuclear submarine business in this country because it is so useful to the Country's interests. So how do you get through that particular period?

Well, this is all we have now. We have four submarines that are authorized and appropriated to build in this decade, and we want two more—the third *Seawolf* and the first ship of the new SSN class. The propulsion plant model behind me that I will describe in a minute is for the New SSN. So, for only two more submarines, you keep your nuclear power industry in this country alive.

It is the most "Bare Bones" Program we could put together. Purposely, we did it that way, living very close to the edge on the thing, so there is not any slack in it. The third *Seawolf* is over a third paid for now, by virtue of getting the long lead funds and a little extra money, and we would finish that. The first *Seawolf*, if all goes well and it generally doesn't, but if all goes reasonably well, we will take on our initial sea trials next February—so the first one is nearing completion. The second one is being worked on and the third one would take us through the start of the lead ship of the new SSN class and then we would move into one to two per year of those.

THIRD SEAWOLF AND NEW SSN

So, right now, we have in the budget before the Congress the authorization for that third *Seawolf* and the money to get us going—the long lead funds—for that new SSN. It is the most austere program that we could put together to stay in business. We have done a number of studies and we have had a number of studies done on us, and they all conclude that this is the most thoughtful program to get us through this period, and spend the taxpayers' money in the most reasonable way. But this is a pivotal year. We have to get these two things or it will be very difficult.

Again, the third *Seawolf* and the New SSN transition down. The third *Seawolf* continues to be talked about as a "bridge" to sustain the skills, but, in fact, it has unequaled military capability and the Joint Chiefs of Staff have said they need so many very quiet submarines by a certain point in the next decade. This third *Seawolf* is one of those submarines. It is not just a WPA program.

The New SSN is technologically right up on the leading edge. We have taken the majority of the research and development that we learned in putting the *Seawolf* together and factored that into that so we don't have to pay for that again. We have worked very hard on making it a less expensive submarine. We made the decision to make it slower and not carry as much armament as the SSN 23, because there is no free lunch—you have to give up something in order to reduce cost. It will have about the armaments capacity of today's 688, so it is not a total backoff as opposed to the 50 weapons of the *Seawolf*.

It will go slower. It will probably go about [deleted] as opposed to some [deleted] for the *Seawolf*. But those are manageable things and are supported by studies. The goal—I am not sure it is on this chart—the goal for this new SSN is to bring it in at a cost that is commensurate with what you would pay for today's submarine, a 688 in then year dollars. We are attempting to build a submarine on the leading edge of technology and yet get it for a cost of a submarine that was essentially 1960s technology.

We have worked very hard on that. We have focused all the program's technical resources in doing that, and we are tracking reasonably well. We look at costs regularly, monthly, much more carefully than we ever have before in the development of the submarine simply because there is so much riding on it. I think we will make this shift over.

Quite frankly, in order to stay alive, we would almost be happy to build anything. We are not just building anything. This is a very fine submarine that you can be very proud of once it goes to sea. It is a technical innovation. I will talk about some of that later.

NEW SSN DESIGN

This is a scale model of the propulsion plant for the new attack submarine. Now, there is a front end that has the torpedo room, but I am just talking about the back end. We have taken the modular construction process one step further.

Early on, in the submarine business, you would have built the entire hull, then cut holes in it and lowered all these big components in and welded them up and so on and so forth, so everybody is working in very confined spaces. Beginning with the Trident Program, and then later in the 688 program and then the Seawolf, we built the submarine modularly, basically a slice of the salami, and populated it with equipment and pumps and valves and turbines and then put those all together.

We are taking this one step further in that we are building the entire insides outside the hull in a building. There will be shops around here. This happens to be the main turbine complex. There is the main turbines, the reduction gears, the turbo generators, and all the associated auxiliaries, the condensers and the pumps and the valves and so on. By doing it this way, the workmen can get access to everything.

Many of these pieces will be lifted in by crane, assembled already and so on and all put together here. Also, there are pressure tests, hydrostatic tests that can be run in this configuration, lube oil flushes and so on, so much testing can be done here. Then, at a certain point when we are all ready and we have the hull cylinders built, we will slide the machinery platforms with the hull cylinders, then bring the aft end of the submarine into position and it is all together.

At the same time, working in the front end of the engineering spaces—this is the reactor compartment, and these are the reactor auxiliaries, the switch boards, and the instrumentation and so on—the first step would be to build it all in this configuration and then at the right point push them into the hull cylinders, put it together, and now I have the instrumentation hooked up to the reactor plant.

I will run the flushes and the hydrostatic tests and so on. This is an actual structure that will be in there that will sort of isolate these components from the shipyard noise so we can run noise tests here and do some of the things we previously would have done in one of those land-based reactors that I talked about before.

[Deleted].

So the new SSN will be built in a significantly different way with much less cost because of the greater accessibility and much more carefully engineered construction. This is part of the reason why we can bring in a very modern submarine at basically a 1960s cost in the same year. We have much, much more carefully engineered the construction process, and the shipbuilder gets about a third of the money for putting it together.

Mr. MYERS. It is like an erector set.

Admiral **DeMars**. It is obviously a lot harder and it costs more money than the way we just did it here with the model, but it works, and we think it is a revolutionary step forward in the construction process of a submarine.

SPENT NAVAL NUCLEAR FUEL

One final issue before I conclude and that is our spent Naval nuclear fuel situation, which is an extension of the problem we had with Idaho and the lawsuit. Since 1957 we have sent our fuel to be stored at Idaho, and we do not have a lot of spent fuel. We are less than 3 percent of all Department of Energy fuel, and of all the fuel in the country, counting the commercial fuel, we are less than a tenth of one percent, so it is not an overwhelmingly large problem as these problems go.

In fact, today in Idaho, the Naval reactor spent fuel is in a large pool that is maybe about the size of this room and there is enough space in there to handle all our fuel until the year 2025, so we have time to work this problem, and we are working on it. Regular shipments out to Idaho were stopped, pending the requirement to develop an environmental impact statement to prove that what we have been doing for 40 years was, in fact, safe. We have come through that—the environmental impact statement is on track, the final one, the preliminary one has been done. We have held hearings all over the country and answered questions. It will be complete in April and a record of decision by June.

It is a very critical issue because now we are storing the fuel in the transportation casks at the shipyards instead of sending them to Idaho. The casks were only purchased for transportation, and therefore we only have so many of them. They were bought to shuttle fuel. It is perfectly safe for storage. We did an environmental assessment to prove that it was safe to store it at the shipyards, but we have no more room. We have no more casks as of June and we have to get back in business and start up again or we won't be able to support the fleet in our refueling work.

We are working with Idaho, and working with the rest of the Department of Energy, and I am hopeful it will be properly resolved to everybody's satisfaction, including the State of Idaho.

NAVAL REACTORS—DEPARTMENT OF ENERGY FY 1996 BUDGET

Finally, regarding our situation in the Department of Energy here, we are a relatively small part of their funding. Only 4 percent of the Department of Energy's funding is for the Naval Reactors Program, and only 1 percent of the staffing. That concludes my presentation. I would be happy to answer any questions you might have.

[The prepared statement of Admiral DeMars appears at the end of the hearing record.]

LIFETIMES OF SHIPS

Mr. **Myers**. Well, thank you, Admiral DeMars. I am sorry some of the new Members weren't here. It is always a fascinating session we have had through the years. Admiral Rickover, of course, always had an exciting presentation, too.

The number of ships that you are presently decommissioning, I think you said there 50 already had been decommissioned and the reactors have been shipped to Hanford. There are more than 50 hulls, I guess, at Hanford presently.

Are you planning now to refuel some of those? What kind of cycle have those ships experienced. How many times have they been refueled that you are decommissioning?

Admiral DEMARS. The ones that we are decommissioning, the vast majority of them are at the end of their normal service life, 30 years for the submarines, and so they will have been at the most refueled twice, or including initial fueling at the most three cores in them. We are attempting to move from the worst case of three cores to the new submarine, which will only have one core.

The *Nautilus*, the original nuclear-powered submarine, had a core that lasted two years, just by comparison; so we moved quite a ways forward since then.

Mr. MYERS. So a 30-year lifetime for a nuclear submarine, how does that compare with the carriers?

Admiral DEMARS. The carriers are expected to last right now, about 45 years, and we should have one refueling at the midpoint in that 45-year span. We, of course, have one different kind of carrier. The U.S.S. *Enterprise* was one of a kind that had eight reactors. Then the Nimitz class has only two reactors, and we are preparing to refuel the first of that class, the U.S.S. *Nimitz*, in 1998. We are in advanced planning for that right now.

Mr. MYERS. Compared to the lifetime of a conventional diesel-powered ship, how long do they stay in service?

Admiral DEMARS. In our Navy, by and large, and I have to go back a little ways—I was on a diesel submarine a long time ago, but I haven't had much to do with them since then—basically they had a service life of about 30 years, but in many cases we transferred some of those to foreign navies where they lasted considerably longer. I wouldn't comment on the safety or the aggressiveness with which they were employed, but some of them were up to about 40 years old by the time they were stricken.

Mr. MYERS. Is there any reason why we chop them up? After World War II we took a lot of liberty ships and the victory ships and stored them in swamp areas up in New Jersey. I have gone by there and seen those ships that we used in World War II. Why can't we do the same with these submarines just in case someone runs the flag up and we need them again?

Admiral DEMARS. We have looked at that because that is an obvious question, a good question. It turns out, that in order to lay it up, you would have to defuel it because storing a submarine with nuclear fuel in it would be beyond the sort of charter that we have to run our business. You would have to defuel it, and then you would have to do a considerable amount of work to lay up the systems with the expectation that you would want to put a nuclear reactor core in it later. This is a little different than the liberty ship context, so we would have to do some work to know how to do that—to know how to preserve the piping, the cabling, the valves so that we didn't get into things like corrosion, cracking, things of that nature.

We worry about that now in a fully operating ship with sailors there all the time, checking the chemistry and so on. So you would have to come through that. Then, when you were ready to bring the ship back, you would have to have a fairly extensive overhaul to check all those things, put water back in, put the fuel back in and so on. That adds up to quite a bit. Then, when you got done with all of that, you would probably have an obsolescent submarine because the ones being brought back wouldn't be as quiet as what you would need 10 or 15 years later.

Mr. MYERS. Well, we would have to do all those things with the new submarine, a new manufactured one. What are the comparable costs? Have they ever ascertained that?

Admiral DEMARS. Some of those costs are difficult to predict because we don't know how to do them. We would have to study how to do it. I think the driving factor is you would put in an awful lot of money and you would end up with a submarine that really wasn't that frontline. Basically, what we have done over the years because submarine warfare has moved ahead so rapidly, particularly in the quieting aspects, is build the very best submarine we can. Nevertheless, 15, 20 years later, it is a second-line submarine simply because you can't make it any quieter and the technology for detecting submarines has moved ahead a bit, so it is the obsolescence in addition to the cost.

NEED FOR NEW SSN

Mr. MYERS. Well, I am a little dismayed by your testimony here about this new SSN. If it doesn't have the firepower and doesn't have the capability of carrying the armament, what good is it? Why did we build the 688 Los Angeles class submarine?

Admiral DEMARS. Well, it will have adequate firepower. It will have a torpedo room that has [deleted] storage positions for missiles or torpedoes and 12 vertical launch tubes, as today's 688 has, so it is a fairly appreciable weapon-carrying capability. It is more than we have had in some earlier classes of our nuclear submarines, but not as much as the *Seawolf*, obviously.

Mr. MYERS. Why did we build a slower submarine? The maneuverability where we would be able to get on the site someplace is one of the advantages we had, I thought.

Admiral DEMARS. In order to save money. You have to make some compromises somewhere. In looking at a lower defense budget and the need to continue to support the submarine missions, we went through a number of engineering studies to see where we could give up on certain things and yet still have a very adequate, more than adequate submarine. One of them was to back off somewhat on the top speed, to trade in that energy density for a life of the ship core, not have to pay for the refueling, and have the quieting of the *Seawolf* submarine. This means you could go faster than a 688 and be quieter. It is a quieter platform in general, so it is, in my view, as both the engineer for this business and a full up submariner before that, a more than adequate submarine for what the country needs to do around the world.

It will still be able to transmit at a very high speed. Today's 688, although it can go [deleted], rarely transits that fast if they think there are other submarines around because it makes it noisier.

This submarine will be able to transit quietly at a higher speed then the 688 even though its top speed is not as high because it is quieter.

Mr. MYERS. So if you have to move to a different site, then you could increase the knots on the speed?

Admiral DEMARS. Yes, sir. In fact, it will get there probably before a 688 because it will continuously travel faster.

Mr. MYERS. One last question before I pass. I think we are all concerned about what direction we are going right now. Could this SSN, the new SSN, be capable of putting more armament on board, retrofitting if it should ever be necessary?

Admiral DEMARS. The answer is, yes. We have done that before in the past, as you probably recall. The first ballistic missile submarine was an attack submarine that we cut in half and put missile tubes in it. The real design innovation here is largely in the propulsion plant. The front end can continue to evolve if more precise munitions or bigger cruise missiles are needed.

Mr. MYERS. Mr. Bevill.

Mr. BEVILL. Thank you, Mr. Chairman.

Admiral, we are always pleased for you to appear before our panel. You always make the best presentation of anybody.

Admiral DEMARS. Thank you.

ALLEGED RUSSIAN MILITARY KNOWLEDGE OF SUBMARINE LOCATIONS

Mr. BEVILL. And do the greatest job, and it is always the most interesting. I didn't get to see it, but I have been told about this recent "60 Minutes" program where a Russian general indicated that he knew where all the U.S. submarines were currently located. Did you happen to see that or hear anything about it?

Admiral DEMARS. Yes, sir, I did. In fact, I looked at it again this morning and then I remembered I had seen it.

Mr. BEVILL. You were anticipating, weren't you?

Mr. MYERS. You knew he was going to ask the question. Good G–2 work.

Admiral DEMARS. I guess I was happy that it was a general that was making the statement because that would be sort of like me talking about tank battalions or something—I wouldn't have much credibility. I don't think there is anything to it. We spent an awful lot of money—primarily during the Cold War, although there is a smaller program that continues now—to look at all the phenomenology for detecting submarines other than acoustically, such as space-based technology and all sorts of things. We did it not only to protect our submarines, but also to look for breakthroughs in anti-submarine welfare.

Nothing ever came about that could reasonably be used. There are certain means to detect submarines under very limited conditions, [deleted] but it generally turns out to not be the places or the circumstances in which you fight wars. We have continued to do that sort of research so that we can ensure that nothing is happening in these areas, and based on that, I don't think there is much to that claim. If they do know where our submarines are, they certainly aren't doing anything about it. So that is another reason why he probably was carried away.

EFFECTS OF DOE DOWNSIZING

Mr. BEVILL. Do you see a problem for the Naval Reactors Program as DOE begins to downsize and reduce funding by more than $10 billion over the next five years, Admiral?

Admiral DEMARS. The short answer is, no, but of course, that game is never over. We have aggressively downsized our program. I think we are 8 percent below where we were last year and 14 percent below the year before that. Since 1992 in constant year dollars we are 25 percent down in our budget. We forced that.

We looked for efficiencies and economies. We laid up some of our land-based reactors and did other things in the program to bring ourselves down because it is always better to reduce yourself than to have somebody else do it. Hopefully, you get some credit for it and less reductions will be taken. So we are down right now to a fairly austere point from the Naval Reactor's budget viewpoint of the past.

I think that is recognized to a degree in the Department of Energy. We can stay on that level and continue some more modest decreases in the future. Then we should be okay. If we have to take bigger hits than that, then because of my responsibilities for the operating reactors, I would have to look at slowing down my remediation of the land-based reactors and the cleaning up of our old plants and things of that nature.

Mr. BEVILL. Mr. Chairman, I would yield.

Mr. MYERS. I will just go ahead if you want to continue. You are going to yield right now?

Mr. BEVILL. I will go, too. I am going to yield right now to Joe.

Mr. MYERS. I am sorry. We have two or three more questions, then we will come back. Thank you.

RUSSIAN SUBMARINE TECHNOLOGY

Mr. KNOLLENBERG [presiding]. Admiral, and Mr. Bevill, thank you for yielding, I appreciate that. We will have a moment or two to get a question or so in here. I happened to look through the pamphlet and I saw a picture of gentleman that was very courteous to me on the U.S.S. *George Washington*. I happened to spend a night on the——

Admiral DEMARS. The commanding officer's picture is in there.

Mr. KNOLLENBERG. I can't remember his name, but he was a very courteous, accommodating individual. I have spent a day on a submarine, as well, so I have a minor background in the kind of work that you do.

Picking up on what Mr. Bevill was talking about with regard to the "60 Minutes" matter, now I know that tends to be the media, but maybe a further question can be drawn from that, even though it was a Russian general that made that comment. Maybe it should have been an admiral.

The question that I have is this business of detection, it is probably a state-of-the-art kind of thing. How do we know that we have, what kind of assurance do we have that we can always stay ahead of the curve rather than being behind it; and what do we know about Russia? Are they still building nuclear submarines, et cetera? What kind of assurance can you possibly give us that——

Admiral DEMARS. It is a technology race by and large, we are continuing to work very hard technically to quiet very large powerful machinery down to very, very low levels of radiated noise.

Mr. KNOLLENBERG. Does the quietness contribute——

Admiral DEMARS. That part is the quieting. The basic noise signature of a submarine is set by the propulsion plant, so we work very hard to make that quiet. The other side is how sensitive is your listening equipment on the submarine, your ability to hear the other ship, so there are two sides to that issue.

The assurance that I have as to where they are vis-a-vis where we are is the fact that we have had operations in close proximity with the Russian submarine force and other navies throughout the world, for three plus decades. We have been able to keep score on how well we are doing vis-a-vis how they are doing. We have a fairly good feel now, as we always have for what is, for lack of a better word, undersea superiority. It is quite close now.

The most recent Soviet submarines at sea right now, and there are only about six of them, are at the quieting level of our best improved 688 submarine at sea today. They are essentially at the same quieting level. We still have better listening equipment, but that is only a matter of time, and with the burgeoning electronic development in the world, you can close that gap quicker than you can quiet machinery. We need the three Seawolfs and this new submarine to give us another step down in quieting, and that will restore that margin to a more than adequate position for the next several decades.

The at-sea comparison gives us a fairly regular measure. We also monitor our own strategic submarines regularly with our attack submarines, with maritime patrol aircraft and with sea-based sensors [deleted] Now, they continue to close the gap. There is no doubt about that.

SUBMARINE TECHNOLOGY IN FOREIGN COUNTRIES

Mr. KNOLLENBERG. What about Russia? We know that Russia has been a force and is still a force in that regard, and we are not privy to everything that they are doing or not doing. In fact, some of the things they are doing that do not particularly impact this discussion today, but it certainly impacts your role, is their arrangement with Iran to put nuclear material in Iran which troubles us; those of us who sit on the Foreign Operations Committee and on the Appropriations Committee because it is money going to a country that, foreign aid I am talking about, that gives us some concerns about the fact that they have this relationship with Iran.

What other countries, maybe Iran would be one, to your knowledge, what other countries are involved in any kind of pursuit of submarine building, submarine technology?

Admiral DEMARS. Well, you have, of course, the nuclear submarine countries—United States and Russia, Great Britain, France and China. France has in the past offered to sell nuclear-powered submarines.

Mr. KNOLLENBERG. To whom?

Admiral DEMARS. The world market. Canadians, for one, were interested. I am not sure who else. The Chinese are continuing to work away at it. Obviously, they have had nuclear submarines for about 20 years. They are probably a distant fifth out of that five, but continue to work on it. This is obviously a long-term thing.

Brazil, Argentina, India, have all had on and off again nuclear-powered submarine programs because of the obvious maritime superiority that it provides. In addition to that, there are some other 12 countries building nonnuclear submarines and seven or eight of those sell them on the world market. While nonnuclear submarines don't have the range, and they are largely for fighting in their own waters, it still is a formidable threat that the Navy has to keep its eye on. Our Navy must be ready for anti-submarine warfare. It is not something that is going to go away forever. It is just in a lull for a while. It will come back.

Mr. KNOLLENBERG. Some of the nations you mentioned are not necessarily unfriendly to us. They are, in fact, for the most part friendly and have been. China, we have a growing relationship there. Is there anything about China that concerns you over and above, say, some of the rest of them?

Admiral DEMARS. Not in the period of time that I am going to have this job. I think if one looks back over history at who used to be our friend and who we were fighting with and now who is our enemy, and project that ahead, and look at countries that have large populations and are going to have other requirements and demands and maybe be unsettling in regions, some of these countries that I am talking about fall in that category. They are not necessarily antagonistic to us now and may not be in the future, but there will always be a rivalry there for economic reasons, trade reasons, so on and so forth or they may be bedeviling some of our closer allies in regions and so I think that we have to view this over the long haul.

The Russian Navy is getting quieter and much better in the submarine business. I don't think we have anything to fear from them certainly for 10 years, at least a decade, but they are never going to be wholehearted friends with us for any number of different geopolitical reasons.

SUBMARINES VITAL PART OF NAVY'S FUTURE

Mr. KNOLLENBERG. Which means we have to be on the alert. Now, you obviously see the submarine playing a part, a very vital part of the future of the Navy and the future of our defense capability and our preparedness. I suspect that even though we have downsized the numbers with the expectation of those that are yet to be built or are in the process of being built, do you see through the next 30, 40 years, if I bought into what you said a few moments ago, certainly 30 years that they are going to be an integral part of what we do?

Admiral DEMARS. Yes, sir. And I think more so. Obviously, everybody brings their own biases and prejudices, and so do I. I have spent a lifetime in submarines. the future development of overhead sensors and precision-guided munitions is going to place an ever higher premium on maritime stealth. That is my polite way of saying submarines are going to have a bigger role in the future.

I don't mean we are not going to have aircraft carriers and carrier battle groups. We need them, but in the future they are going to have to operate with increasing care in a lot of places in the world. So 10 years from now we can probably target ships from some satellite. The ocean's surface is transparent and so I think that the stealth inherent in a submarine is going to become much, much more important in the future. It has been in the past. It will be equally important in the future.

RECRUITING PERSONNEL FOR NAVAL NUCLEAR PROPULSION PROGRAM

Mr. KNOLLENBERG. Admiral, I am going to have to depart. I have a vote to go to. I will turn the Chair back to Chairman Myers. I have got a question here on recruitment. I know it takes a certain kind of person to be in the submarine service. Is that being hurt?

Admiral DEMARS. It is a little bit. It is difficult to tell how long term it will be. I think there are enough of the right kind of people out there that will always want to do this business. The issue is keeping the Navy recruiting budget high enough to find these people. That is the challenge.

The Navy recognizes that. Generally, we have never run out of the right numbers of people to bring in, even during the height of the Cold War, but it is a challenge. Congress recognizes this and provides us outside entitlements, bonuses, and things of that nature to attract and retain the right kind of people. It is a very small number, less than 10 percent of the people in the Navy are nuclear-trained.

Mr. KNOLLENBERG. Admiral Rickover had something to say about that, didn't he? Wasn't he somebody who settled that profile?

Admiral, thank you very kindly. I have got to run. I appreciate your testimony. I yield the Chair back to the chairman.

PRESENT CONDITION OF RUSSIAN SUBMARINE FLEET

Mr. MYERS [presiding]. Again, we apologize, Admiral DeMars, for having to play a tag team here. The one thing that disturbed me is that at one time the Soviet Union seemed to be somewhat in competition for the number of submarines. Do we know of what condition their submarine fleet is in now and the security, the safety of those reactors on board those ships and what they are doing with them?

Admiral DEMARS. It is difficult to tell whether they are making headway in the basic safety and security problems that they had which were fairly fierce. We do know they have converged on a view of nuclear submarines that matches ours to a large degree—pressurized water reactors. They have gotten away from the exotic metals and the titanium hulls. They are using high test steel the way we are, so their design vision is much more rational.

We always wondered why they were doing these exotic things in the past—some of the reasons weren't very valid—so I think they are getting much more professional in their approach of how to do it. They are getting rid of a lot of submarines that were of no military value and were obviously a drain on resources. They were old, they were noisy, and they were liabilities, so they are not operating them anymore. Because we have refused to help them decommission and defuel them, they are finally starting to do it themselves.

It took us about three years of telling them we weren't going to help them and, in essence, subsidize their submarine program. They had to learn how to cleanup after themselves, and now they are starting to do it at a much lower level than the program I talked about here.

They intend for the submarine to be the center of their Navy. They have said that. The head of their armed forces has said it. He is an Army guy, too, but I believe him.

Mr. MYERS. There is nothing wrong with army guys.

Admiral DEMARS. The Russians are in for the long haul. Our Chief of Naval Operations is hosting a visit by the head of the Russian Navy here. They asked him what he was interested in when he came over here, and he said one thing—submarines, whatever that means, but that is what he is interested in. They have chosen to get their Navy focused back primarily on submarines with their limited resources. They are designing new submarines, and we think their equivalent of *Seawolf* is being built right now, and should come out within a couple of years. They are patrolling at sea again, and are moving to a smaller, more capable submarine force.

SCUTTLING OF RUSSIAN SHIPS

Mr. MYERS. At one time there was—I believe I remember there was some indication maybe they were just scuttling their ships, their boats.

Admiral DEMARS. Off the coast of Novaya Zemlya, the East Coast of Novaya Zemlya where they scuttled, and I don't have the exact numbers, an entire submarine with the core in it, and then dumped several other reactor cores there without the submarines around it. They are still there. People have returned to do water sampling, and it appears like it is fairly well contained there, but it obviously was not the right thing to do.

ACCESS TO NEW ZEALAND

Mr. MYERS. In your map of the world a moment ago you showed all of the spots where nuclear reactors are located and where your fleet, nuclear fleet can visit. Other than New Zealand, is there any place else where we don't visit?

Admiral DEMARS. New Zealand is the only one we haven't been able to get back into. New Zealand came out with a report over two years ago, written by a commission they formed. It is a very positive report, and they said there is no technical or safety aspect to keeping the ships out. It is a political decision, and I think they have to change their law to allow us back in, and so it is a difficult thing for them to do.

Their military wants them to do it. Obviously, we want them to do it. I think it will eventually happen, but we are still not back in there yet. Their argument was primarily, I think, over nuclear weapons on ships. Our policy, of course, has now been changed, but we are still excluded from New Zealand. Some day we will be back there.

COMMERCIAL APPLICATION OF NAVAL NUCLEAR POWER

Mr. MYERS. This is the same question I think I have asked every year. We are decommissioning some of these carriers of nuclear power, including mostly submarines. We have some islands in the

Pacific such as American Samoa where the cost of generation of electricity is just tremendous because of the importing of fuel oil primarily.

Is there any reason why we couldn't park one of these submarines that we are going to decommission in the next few years and hook it up with a power system for three or four years, then make another one to last a year or two of the lifetime?

Admiral DEMARS. You could make some electricity, but the plants aren't designed to do that economically—to put electricity on a grid. The majority of the power is designed to go into the main turbines to turn the screw. It is also designed to be very quiet and very compact, so the economies of it would not be there. You obviously wouldn't run it except with nuclear-trained sailors and officers, so there would be that aspect.

Mr. MYERS. You have got them anyway.

Admiral DEMARS. It is really beyond our charter to do that, and technically you just wouldn't provide very much power.

Mr. MYERS. It wouldn't produce very much power?

Admiral DEMARS. Not very much.

Mr. MYERS. To run a little island like 25,000 or 30,000 people?

Admiral DEMARS. I don't even know if the water is deep enough to us to get into. Obviously, I don't think it is a very good idea.

Mr. MYERS. I know you have always rejected it. Mark my word, we will do it some day. Somebody is going to come along and say—I always remember the story they told about President Johnson, somebody came down and said, Mr. Johnson, Mr. President, we need something done the Corps of Engineers could do; so they had the Corps down there and the Corps gave about 10 reasons why they couldn't.

He listened to it. Now he said you have told me 10 reasons why you can't. Now, tell me one reason why you are going to do it. So I guess we could somewhat make that decision someplace and try it anyway. Some of those islands, you know, the Marshalls and so forth there has been a problem.

Well, Admiral, we appreciate your testimony once again. I am sorry that we didn't get everyone here for this important session. It certainly doesn't reflect on the importance of the mission you have. We appreciate the job you are doing, and continue to do. A number of us have other questions that we will provide for the record, so thank you very much for your testimony today.

Admiral DEMARS. Thank you very much, sir.

[The prepared statement of Admiral DeMars and the questions and answers for the record follow:]

NOT FOR PUBLICATION UNTIL RELEASED BY
THE HOUSE COMMITTEE ON APPROPRIATIONS

STATEMENT OF
ADMIRAL BRUCE DeMARS, U.S. NAVY
DIRECTOR, NAVAL NUCLEAR PROPULSION
BEFORE THE
SUBCOMMITTEE ON
ENERGY AND WATER DEVELOPMENT
OF THE
HOUSE COMMITTEE ON APPROPRIATIONS
15 MARCH 1995

NOT FOR PUBLICATION UNTIL RELEASED BY
THE HOUSE COMMITTEE ON APPROPRIATIONS

Statement of Admiral Bruce DeMars
Director, Naval Nuclear Propulsion
FY 1996 Appropriation Hearings

I am pleased to again have the opportunity to update you on the Naval Nuclear Propulsion Program.

ROLE OF NUCLEAR POWERED WARSHIPS

Forty years ago this January, the world's first nuclear powered ship, the submarine USS NAUTILUS, put to sea, sending her historic message "Underway on nuclear power." The advent of nuclear propulsion for warships was a preeminent naval development in the 20th century. The disengagement from a logistics train for high speed surface ships and the more revolutionary unleashing of the submarine were vital to the successful conclusion of the long Cold War. This critical technology will not diminish in importance in the future. The smaller fleet, the uncertainty of the threat, and the increasing difficulty with overseas basing will showcase the importance of nuclear powered warships. Additionally, the continued explosive development and deployment of overhead sensors and precision guided munitions will place an ever higher premium on the stealth of submarines and mobility inherent in nuclear propulsion. The United States Navy leads in this technology now and must maintain this position in the future.

Upon retirement of the last POLARIS nuclear powered submarine from strategic service in October 1994, the sea leg of the Nation's strategic triad now consists solely of OHIO Class nuclear powered ballistic missile submarines -- the TRIDENTs. A GAO review in 1993 found nuclear powered submarines provide the most cost-effective leg of the U.S. strategic triad, noting "...submerged SSBN's are even less detectable than generally understood and that there are no current or long-term technologies that would change this."

In times of crisis, the National Command Authorities frequently ask where the nearest aircraft carriers are. These powerful ships can bring U.S. force to bear quickly without having to obtain approval of foreign governments. By 1999, 75% of the Navy's carriers will be nuclear powered, bringing unprecedented flexibility and punch to the Navy's strike force.

Less well known is that a nuclear powered U. S. attack submarine likely will be first on the scene -- this has been true in 90 percent of the crises in the past 30 years.

SAFETY AND PERFORMANCE

Of utmost importance, the Program's excellent safety record continues -- this is essential to our continued use of nuclear power. To fulfill the Navy's crucial role in protecting

U.S. interests worldwide, the Navy must be able to operate nuclear powered warships without constraint, and the nations of the world must have assurance in their safety. Nuclear powered warships visit over 150 ports in over 50 countries and dependencies around the world.

The high degree of public confidence in the Navy's nuclear powered ships springs from the Program's excellent environmental and safety records. Two factors have made this possible. First, the dedication of the Program's people. As the President wrote in April 1994 upon the achievement of 100 million miles steamed on nuclear power, the Program's people "...represent a remarkable blend of the best of our Nation's talent and resolve...". Second, the Program's unique organizational arrangement and scope, fostered by Congress, allows us to focus all aspects of the work on the common goal -- safe and reliable nuclear propulsion. The attached booklet contains the President's April 1994 letters, related letters and a brief overview of the Program.

The Navy's achievement of steaming 100 million miles safely on nuclear power can blind people to the hard work required to sustain that record. This safety and performance record does not come easily, as this Subcommittee has always recognized. Most of the Program's work is devoted to ensuring the quality of the operating plants and the personnel running them -- their safety, readiness, and reliability. With over 130 plants of diverse types, powering over 40 percent of the Navy's major combatants and 1,500 Navy personnel to train annually, this is a major challenge. We are meeting this challenge and creating economies in the process.

We are extending the useful life of existing reactor cores. Through examination of spent fuel, improved analytical methods and our advanced knowledge of applied physics, we have been able to certify cores for longer lives than original design expectations. The payoff is a substantial life-cycle cost savings -- for example, absent these efforts, extending the operating life of NIMITZ Class aircraft carriers to 45 years would have required a second refueling.

We are increasing operational availability of ships to the fleet. We carry out a series of shipyard maintenance periods during a ship's life ranging from frequent, short "availabilities" to infrequent, long refueling/overhauls. The less time spent doing these, the lower the cost, and the more time the ships are available to the fleet -- a key advantage with a "bare bones" force structure. OHIO Class submarine overhauls are taking only half as long as originally expected, the length of a LOS ANGELES Class submarine refueling/overhaul is down from 27 months to 20 months, and we have been able to extend the interval between availabilities for this Class -- eliminating 23 availabilities over the next six years saving at least $200M.

We are reducing the effort to inactivate decommissioned ships. For example, we have cut nuclear inactivation costs for submarines by 50 percent since 1991, and we brought in the first planned nuclear cruiser inactivation at 60 percent of estimate.

The work required to verify performance and achieve such economies involves a multitude of activities -- extensive materials and component testing efforts, determining better testing methods and ways to analyze reactor plants and their constituent parts, continuous physics analysis to predict and adjust to nuclear core performance over time, life extension studies, and developing replacement shipboard equipment to improve performance, overcome deficiencies, deal with obsolescence, and ensure maintainability.

SSN 21

Work on the lead ship of the SEAWOLF Class, SSN 21, is progressing apace. Last year, I noted the advanced fleet reactor, the reactor intended for the SEAWOLF Class, had just been installed in the S8G prototype plant for testing. That reactor went critical in March 1994 and is operating well. For the shipboard plant, the reactor core will be loaded this month and the ship's pre-commissioning crew is already operating reactor plant systems. All indications are SSN 21 will be a splendid ship and should be ready for sea trials in 1996.

FULFILLING COMMITMENTS

Downsizing

We have inactivated over 70 nuclear powered ships, nearly 50 since the Cold War's end. Since then, we also carried out major shipyard work on 28 nuclear powered ships, including refueling the USS ENTERPRISE (CVN 65), the only ship with eight reactors -- a massive undertaking completed within budget.

In 1993, the Navy decided to close two of the six nuclear capable Naval shipyards, Mare Island in California and Charleston in South Carolina. The decommissioning work is well along -- and on budget and schedule.

We also began to downsize the Program's facilities and industrial base five years ago and have made substantial strides. Among our actions, we cut back to one supplier, each, for most nuclear components and fostered streamlining at the survivors' plants to efficiently deal with lower workloads; obtained agreement for DOE to stop producing highly enriched uranium and reprocessing spent Naval nuclear fuel, actions which are saving hundreds of millions of dollars annually; and approved shutting down 75 percent of the Program's land based prototype reactor plants used for R&D and training Navy reactor operators -- four already are shut down, with the last to occur in early 1996.

These actions come with a price. We must inactivate our facilities upon shutdown. Our budget request includes funds for inactivating our DOE prototype plants and other laboratory facilities, but our good stewardship while operating these facilities minimizes the inactivation cost.

Producing nuclear components requires a highly skilled and experienced work force capable of meeting the Program's quality standards. Because of these high quality standards, the industrial base for the key nuclear components is unique -- the Navy is the only customer. We have learned the hard way that a supplier requires many years to become qualified, and the cost is very high. Therefore, we are taking steps to sustain the ability to produce quality nuclear components.

The Challenge

No nuclear powered submarines have been authorized since 1991. This is a consequence of cutting back the Navy's fleet by retiring older ships and drastically curtailing procurement of new ones. The two nuclear shipbuilders and the remaining (and now single source) nuclear suppliers have been surviving on their backlogs, including the new aircraft carrier (CVN 76) reactor plants funded in FY 93.

The backlog of work is running out. To help, the Navy is seeking funds in FY 96 to complete the third and final SEAWOLF Class submarine, SSN 23. The Navy also is seeking approval in FY 96 to buy the long lead nuclear propulsion plant components for a new class of capable, more affordable attack submarines -- the New Attack Submarine.

The third and final SEAWOLF is needed in FY 96 as a "bridge" for the shipbuilder to the New Attack Submarine -- the most economical and low risk option to sustain the submarine shipbuilding base until construction of the New Attack Submarine can begin in FY 98. This final SEAWOLF is more than a third paid for. Consequently, a highly capable SEAWOLF can be completed for the additional cost of a new LOS ANGELES, would be a major contribution to the Navy's future fleet, and is a vital part of the Navy's ongoing plan to shift efficiently and economically to the New Attack Submarine Class.

Authorizing the lead New Attack Submarine in FY 98 -- the earliest construction can start -- with procurement of long lead nuclear propulsion plant components in FY 96 is the most cost effective approach to maintain the submarine and nuclear components industrial bases while meeting future force level goals. The intent is to establish long term, stable, low-rate production. Numerous studies over the past two years converge to this conclusion.

The propulsion plant long lead components in FY 96 are essential to support the start of New Attack Submarine construction in FY 98. Without new work in FY 96, key surviving nuclear component suppliers likely would be forced from the business. They need this work to keep their drastically downsized operations in production as they complete the previously authorized nuclear components for CVN 76 and SSN 23.

Reconstituting a nuclear component industrial base would be a very high risk proposition -- if it could be done at all.

Why a New Attack Submarine?

While downsizing the Navy is necessary and is being accomplished steadily, we must be able to deal with an uncertain future. Russia has chosen to continue emphasis on its nuclear powered submarine force at the expense of other forces. The Russian Minister of Defense has stated "a nuclear submarine fleet is the future of the armed forces." While their submarine force is shrinking in numbers, quality is increasing, capability is growing, new designs are in the works, and submarine patrols and surveillance of our forces have resumed. Rather than committing resources to properly dispose of their old ships and the fuel from them, the Russians continue to devote resources to advanced nuclear submarine construction.

China is upgrading its navy and becoming more assertive. Other nations also are beefing up their naval forces. For example, Iran is acquiring submarines with an avowed intent of establishing naval dominance of the Persian Gulf, and India has a program underway to develop a nuclear powered submarine. In short, while military tensions are down, the submarine threat is expanding.

Given this uncertainty, attack submarines will remain vital to national security. The United States, as a maritime nation, needs a strong Navy, and nuclear submarines fulfill crucial roles. Given their key Cold War mission of countering Soviet submarines, our submarines tend to be incorrectly perceived as having only this narrow anti-submarine role.

In fact, attack submarines are extremely versatile. The reason for countering Soviet attack submarines was to preclude their ability to decimate sea borne trade as Germany did in World War II and as our submarines did to Japan in the same war. More recently, nuclear powered submarines were a key factor in Britain's ability to bottle up Argentina's fleet in port during the Falkland Islands War. Evolving technology continues to enhance the utility of submarines -- Operation Desert Storm demonstrated submarines armed with cruise missiles can now attack distant shore targets as well as naval targets.

Nuclear submarines are expensive, but they pack a lot of punch and are economical to operate. Consider -- the bulk of their weaponry is for offensive purposes; they can operate alone without support; they have amazing endurance and small crews; they can get close to a potential enemy either to attack, conduct special operations, or gather intelligence, but remain invisible; and this invisibility, by creating a terrible uncertainty, is a substantial force multiplier. Their ability to disappear into the sea precludes the need for extensive defensive measures or putting military personnel into risky circumstances.

The LOS ANGELES Class attack submarines, our current front line operating class, have proven to be excellent ships. But any ship eventually becomes obsolete. LOS ANGELES Class ships are becoming increasingly vulnerable to detection and lack margin to accommodate further improvements. We must have attack submarines with the capabilities necessary to accomplish missions in the future.

The new SEAWOLF Class was intended to replace the LOS ANGELES Class over time, but SEAWOLF was designed at the height of the Cold War to deter massive Soviet forces. SEAWOLF submarines are highly capable, and those being built will serve our Nation well, but constructing them in large quantity is not necessary.

The Navy now is well into designing the New Attack Submarine -- a technologically robust ship that provides the best balance between cost and capability. This new submarine will cost about the same as a new improved LOS ANGELES Class ship while retaining SEAWOLF quieting -- an essential military feature in a submarine. The ship will achieve the lowest cost possible commensurate with required military capability. For example, reduced speed allows lower acquisition and life cycle costs through simplification, producibility improvements, and new technology (e.g., fewer components, enhanced modular construction, new electric plant design, and life-of-the-ship reactor core). Reconfigurable spaces and modular construction will enable adaptation to different systems and missions in future ships and will incorporate the best state-of-the-art technology available to reduce cost, including life cycle costs, while maintaining or enhancing capability, and will have the flexibility to adopt future technology.

ENVIRONMENTAL CONSIDERATIONS

Program's Record

The Naval Nuclear Propulsion Program's environmental record remains the envy of other nuclear programs around the world. During the past year, we have received more than 20 inspections from Federal and state environmental regulators at Program facilities with no "Notices of Violation," no fines or penalties, and no enforcement actions resulting from these inspections.

Each year the Nuclear Regulatory Commission publishes a list of liquid and airborne radioactive releases from individual U.S. commercial nuclear power plant sites. Compared to these individual site releases, the total release by all Program activities combined, including all the ships, continues to be near the very bottom. Likewise, our effective management continues to minimize radiation exposure among workers, remaining far below limits allowed by Federal standards.

The attached reports update Program performance for 1994.

Spent Naval Nuclear Fuel

For almost 40 years, the Program has sent Naval spent nuclear fuel to the Naval Reactors Facility, located at the DOE Idaho National Engineering Laboratory (INEL). Examination of this spent fuel allows us to confirm performance of operating nuclear cores and obtain data for new core designs. Subsequently, the spent fuel is stored at INEL's Chemical Processing Plant awaiting ultimate disposal.

For perspective, we are a very small part of the waste stream -- Naval spent fuel constitutes less than 3% of all DOE spent fuel and less than 0.1% of all commercial spent fuel.

We are working closely with DOE in developing an Environmental Impact Statement (EIS) covering safe management of all DOE and Naval spent fuel while a permanent geologic repository is developed for ultimate disposal. The draft EIS, published in June 1994 and presented to the public in 33 public hearings at 20 locations around the Nation last summer, identified the Navy's preference to continue sending Naval spent fuel to the Naval Reactors Facility -- a continuation of safe and successful practices. This approach avoids the need for constructing expensive new facilities, and ensures essential R&D work continues.

We have gone to great lengths to ensure the EIS conservatively evaluates the environmental impacts. The analyses revealed no surprises; they confirm the Program's record of safely transporting and managing spent fuel.

The final EIS is to be done by April 30, 1995 and a Record of Decision made, selecting a course of action by June 1, 1995. Thanks to a concerted effort, the work is on track, and I expect completion on schedule.

By the end of this month, we plan to have completed all Naval spent fuel shipments agreed to by the state of Idaho. This will allow the Navy to service shipboard nuclear reactors until the EIS is done. However, our ability to hold Naval spent fuel at the shipyards will be exhausted by that time. Unless regular shipments resume shortly thereafter, the Navy will be unable to continue crucial nuclear plant defueling and refueling work at Naval and private shipyards.

SUMMARY

We have and will continue to downsize the Naval Nuclear Propulsion Program smartly -- in doing so, we will meet our commitment to provide quality nuclear propulsion plants for the Navy's use, and to ensure their readiness and safe operation. We must ensure the capability to produce nuclear powered warships to meet future defense needs.

The President last year stated "the Naval Nuclear Propulsion Program, with its high standards and efficiency, exemplifies the level of excellence we are working toward throughout our Government." With the continued support of Congress, we will maintain this level of excellence as our hallmark.

I have attached a discussion of my FY 1996 DOE budget request.

FY 1996 BUDGET REQUEST

My FY 1996 budget request of $682.2 million is 14 percent less and eight percent less than the FY 1994 and FY 1995 enacted amounts, respectively, and represents a full 25% reduction since FY 1992, in constant-dollar terms. Aggressive cost-cutting initiatives, such as shutting down six of eight land-based prototype plants, reducing Advanced Test Reactor operating costs, and suspending production of highly-enriched uranium, have allowed us to achieve these reductions while continuing to ensure the safety and reliability of operating nuclear plants and accommodating needed reactor plant development.

DEVELOPMENT AND SUPPORT OF THE FLEET

Reactor Development ($327.9 million) and Plant Development ($127.0 million) decrease from FY 1995 by 9 percent and 16 percent, respectively, principally due to progress in designing/fabricating test hardware for the next-generation reactor, new concept steam generator, and associated equipment, for which efforts peak in FY 1995. Though these new reactor components and systems are intended primarily for the Navy's New Attack Submarine class, the technology also will benefit future reactor plant developments and improvements to existing plants.

Ensuring the safety of and improving operating Naval nuclear reactors are crucial factors in maintaining the readiness and longevity of existing nuclear powered warships, especially as the fleet downsizes and ships operate beyond their original design lifetimes. Unlike commercial nuclear power plants, Naval reactors must be rugged and resilient enough to withstand decades of rigorous operations at sea, subject to a ship's pitching and rolling and rapidly-changing demands for power, possibly under battle conditions. They must be reliable and maintainable -- sailors live next to the reactors and must be able to solve problems when they arise.

These conditions -- combined with the harsh environment within a reactor plant, which subjects components and materials to the long-term effects of irradiation, corrosion, high temperature and pressure -- necessitate an active, thorough and far-sighted technology effort to verify reactor operation and enhance the reliability of our operating plants, as well as to ensure Naval nuclear propulsion technology provides the best options for future needs.

Along these lines, major development emphases include: seeking and testing high-integrity core and plant materials capable of withstanding the extreme conditions in Naval nuclear plants over long lifetimes, and improving analytical and inspection methods for material corrosion performance and cracking resistance; developing methods to predict and lessen performance-reducing corrosion product deposits and maintenance-limiting radiation level buildup by minimizing sources of fluid system impurities and long-lived radionuclides and formulating sophisticated water chemistries; optimizing and assessing reactor power distribution, fuel depletion, and reactor performance throughout operating lifetime to ensure efficient, safe, reliable operation by applying advances in nuclear physics and computer modelling; dissecting and carefully examining expended cores and irradiated material specimens to compare their performance against design predictions, which will lead to improved fleet operating parameters and more precise designs and models in the future; and analyzing nuclear, thermal-hydraulic, structural, and fluid-mechanical data measured in both prototypic test components and operating plants to better understand and predict plant performance and feed into future reactor designs.

Also, we are simplifying designs and improving manufacturing processes to produce more cost-effective and higher-performance reactor components -- cores, reactor vessels and structures, control rod drive mechanisms, etc. -- such as those for the next-generation reactor, while achieving longer operational lifetimes and enhanced reliability; developing new plant components such as the new concept steam generator, with improved corrosion resistance, greater plant design flexibility and efficiency, and reduced life-cycle costs; and upgrading instrumentation and control systems for reactor plant equipment by incorporating state-of-the-art microprocessor and solid-state technologies into sensors, indication, and control equipment in existing and future plants.

The $135.5 million for Reactor Operation and Evaluation (up 2 percent) is principally for operating, servicing, and inactivating our land-based prototype nuclear propulsion plants. These plants allow us to test components and systems, prior to fleet use, to assess performance under actual, "at-sea" operating conditions -- and resolve problems, if necessary, before any effect on operating ships. For example, we are testing and analyzing the advanced fleet reactor -- intended for the SEAWOLF Class attack submarine, first scheduled to go to sea in 1996 -- in the existing S8G prototype plant. These prototypes also serve as training platforms for Navy nuclear plant operators, providing hands-on experience before initial sea duty.

While these prototype plants have been valuable testing and training facilities, we have been shutting down most of them in concert with fleet downsizing and fiscal constraints. However, by doing so we incur a mortgage -- the need to inactivate these plants in an environmentally-responsible manner. We have to remove fuel, dismantle systems, and ensure proper equipment removal and disposal. We therefore will be performing extensive servicing work on the shut-down prototypes into the next decade before realizing the full savings of shutting them down. The two remaining prototype plants, with proper maintenance and servicing, will be adequate to meet testing needs for some time.

Along the same lines, to maintain the Program's excellent environmental and safety record, we must continue environmental monitoring and upkeep at our laboratory facilities.

PROGRAM INFRASTRUCTURE

The $19.2 million in Program Direction funding will cover Naval Reactors' 217 DOE personnel at headquarters, the Program's field offices, and the Idaho Operations Office, including salaries, benefits, travel, and other expenses. This staff maintains oversight of the Program's extensive day-to-day technical and administrative operations, while continuing to ensure compliance with growing environmental, safety, and other regulatory requirements, which -- notwithstanding our excellent record -- necessitate substantial effort.

After a one-time drastic cutback in FY 1995 to help fund new reactor plant test hardware, the $43.0 million in Capital Equipment (up 48 percent) restores the funding level necessary to maintain and modernize the Program's laboratory and testing facilities, including Bettis, Knolls, two prototype sites, the Expended Core Facility, and DOE's Advanced Test Reactor. Procuring massively parallel computers instead of conventional supercomputers will meet the increased computing power needs for nuclear design/analysis while saving money -- not only are they less costly, they can be upgraded over time as computing demands grow, obviating peaks in capital equipment budget requests. Other major procurements include replacing or upgrading aging and obsolete equipment such as: irradiated test specimen transfer casks; thermal-hydraulic test equipment to improve understanding of reactor fluid dynamics; an analytical electron microscope for materials examination; corrosion and chemistry test equipment; instrumentation and control equipment for operating control rod drive mechanisms; and in-pile specimen tubes for the Advanced Test Reactor.

Construction funding, $29.6 million (up 48 percent), principally provides for maintenance, refurbishment, and replacement of the Program's aging facilities. Though there are no new major construction projects, two FY 1995 projects peak -- Laboratory Systems and Hot Cell Upgrades, and Advanced Test Reactor Radioactive Waste System Upgrades. The FY 1996 request also includes the baseload of general plant projects; final increment of the Engineering Services Facilities project; and restart of the Expended Core Facility Dry Cell project in anticipation of resuming spent fuel shipments to the Naval Reactors Facility in Idaho. Overall, investment in these various projects will extend the lives and improve the efficiency of the Program's facilities.

NAVAL REACTORS ROLE IN DEPARTMENT OF ENERGY

Mr. Myers. Please explain why the Naval Reactors program reports to both the Department of Energy and the Department of Defense. Is this still the best arrangement, or are there efficiencies which can be gained by moving Naval Reactors to DOD?

ADM DeMars. Naval Reactors exercises the independent oversight authority bestowed on the DOE through the Atomic Energy Act to assure the safety of reactor plants in the Navy's nuclear-powered warships. Naval Reactors' environmental and safety record for the past forty years, during which Navy nuclear-powered ships steamed over 100 million miles without a single nuclear accident, highlights the success and efficiency of the dual-agency arrangement. As a fully integrated program, all Naval Nuclear Propulsion Program activities are under a single management structure which optimizes efficiency. Consequently, no gain would result from being only in one Department.

Mr. Myers. The Department of Energy (DOE) has a reorganization study underway. What role do you see for Naval Reactors within the DOE in the future?

ADM DeMars. I envision a continuation of Naval Reactors' historic role -- ensuring the safety and performance of Naval reactor plants, developing new reactor plants, and exchanging development and safety technology on nuclear power generation with the commercial power industry.

FUTURE MISSION OF SUBMARINES

Mr. Myers. How do submarines fit into the future missions of the Navy? How does this program contribute to defense readiness?

ADM DeMars. Submarines are very versatile ships. As the size of the Navy decreases, this versatility becomes more important. Also, the inherent stealth of submarines gives them decided advantages. Submarines are able to move quickly and covertly and remain on station for extended periods of time with no outside support. The Navy's ballistic missile submarines are the Nation's most invulnerable and cost effective strategic deterrent, while attack submarines are the platform of choice for intelligence gathering, anti-ship warfare, and insertion of special forces. Also, the inherent stealth minimizes the need for defensive weapons.

The Naval Nuclear Propulsion Program's chief contribution to fleet readiness is to keep the nuclear propulsion plants in these ships safe, reliable, and operational with well-trained operators to support the Navy's missions.

PRESSURIZED WATER REACTOR DEVELOPMENT

Mr. Myers. Since you have extensive experience operating nuclear propulsion plants, why do you need to continue development efforts on pressurized water reactors?

ADM DeMars. Continued work is necessary for several reasons. We continue to make technical advances which lead to better reactor plants. For example, ongoing work has permitted the operational life of many plants to be extended beyond their original design life. For the NIMITZ Class, we have been able to make 40% more useable energy available since the original design was developed through refining control parameters. The new submarine reactor under development will have a service life of over 30 years. We expect further development efforts could yield even longer core lives. Extending core life precludes refuelings which saves money, increases operational availability to the Navy - a force multiplier - minimizes the amount of spent fuel to be disposed of, and reduces radiation exposure.

Also, the operating plants require attention over their lifetimes. Equipment breaks or wears out, and we often develop new equipment as replacements to improve performance, reduce cost, or because the underpinning technology has become obsolete. We continue to learn more about the technologies involved in nuclear propulsion, such as materials properties, thermal hydraulics, and nuclear physics, and must assess operating plants based on this knowledge to ensure continued safe operation.

USE OF SENSORS AND GUIDED WEAPONS

Mr. Myers. In your statement, you noted the growing use of sensors and guided weapons would place a higher premium on the stealth and mobility provided by nuclear propulsion. Can you expand on this?

ADM DeMars. As the range and efficiency of sensors improve and data processing capabilities expand, the Navy's ability to position and maneuver forces afloat undetected diminishes. To offset this, nuclear propulsion provides stealth and mobility. Our submarines are virtually impossible to detect when operating submerged, allowing them to remain hidden in transit and while on station until their services are needed. For aircraft carriers, nuclear propulsion brings independence and mobility to help offset pinpointing by modern sensors. This comes about through reduced dependence on logistic support by eliminating the need for fuel oil, which also allows the ship to carry more weapons, aviation fuel, and escort fuel and allows them to move about with a greater operating envelope. The long reactor life also increases time on station.

FOREIGN SUBMARINE CONSTRUCTION

Mr. Myers. You noted the Russians continue to build very capable nuclear-powered submarines and are pursuing improvements. What about other nations?

ADM DeMars. Thirteen countries including Russia are currently building submarines, and seven of these countries are offering their submarines for sale. In addition to Russia, three other countries, France, the United Kingdom, and China, are building nuclear submarines. France has indicated an interest in selling a nuclear-powered submarine. India is in the process of designing a nuclear submarine. Russia has offered assistance and loaned a nuclear-powered submarine to India in support of this effort.

Several countries, including Iran, are buying diesel submarines, which poses a substantial risk of shipping disruption in coastal areas should hostilities break out. Even in the absence of hostilities, the threat these submarines might be used enhances the influence of such countries, adversely impacting U.S. and Allied options.

Also of concern is the sale of advanced technology, such as sonar, computer system and weapons system technology. These technologies substantially enhance submarine tactical usefulness and demand even quieter submarines to reduce chances of detection.

RUSSIAN SUBMARINE DISPOSAL AND CONSTRUCTION

Mr. Myers. The Russians appear to have a problem disposing of their old nuclear-powered submarines even though they continue to build and upgrade their newer ships. Please provide your views on this situation.

ADM DeMars. Russian military leaders continue to place the highest priority on nuclear submarine design and construction while doing little to scrap their older nuclear submarines or properly dispose of radioactive waste. Having built and maintained the largest nuclear submarine fleet in the world, including designs using titanium hulls, the Russians clearly have the technical expertise to dispose of their ships and waste. However, except for a few limited cases, they have chosen not to apply their resources to these tasks.

The U.S. has provided, under the auspices of the strategic weapon dismantlement effort, approximately $30 million worth of low-tech equipment to assist in submarine missile compartment disposal. This equipment is equally useful for the remainder of the submarine. Despite this help, a lack of commitment keeps Russian progress on submarine disposal at a minimum.

While some efforts to provide the Russians assistance in assessing arctic pollution may be appropriate, I do not consider it appropriate to give U.S. technical or financial help when they are unwilling to help themselves. We must avoid subsidizing their continuing efforts to develop and deploy modern nuclear powered submarines.

REPORT ON USE OF LOW ENRICHED URANIUM AS NAVAL FUEL

Mr. Myers. The Navy was directed in the fiscal year 1995 National Defense Authorization Act to prepare a report on the use of low enriched uranium as fuel for naval nuclear reactors. Can you summarize your findings to date?

ADM DeMars. Over the last six months, Naval Reactors has made an extensive study on the potential of low enriched uranium as fuel for Naval reactor plants. In addition to Naval Reactors' technical staff, the study has involved our DOE laboratory and shipyard design experts.

Naval Reactors has assessed fuel cycle development requirements -- the effort to develop LEU fuel with the integrity of the present highly enriched uranium used in Naval reactors, and how extensive a testing program would be necessary to verify the results of such a development effort. We also have studied the impact of LEU on reactor plant and ship design and performance, on the availability of nuclear powered ships to fleet commanders, and on shipyards and industrial facilities.

The report we are preparing as a result of the study will fully address the technical and programmatic impacts.

ADVANCED FLEET REACTOR EVALUATION

Mr. Myers. You stated that the advanced fleet reactor is currently operating in a land-based prototype and the first SEAWOLF will go to sea in 1996. Will you gain enough information on the reactor's performance by that time?

ADM DeMars. The advanced fleet reactor prototype core has already operated longer than the entire life of the first NAUTILUS core. Initial testing indicates the core is operating very near predictions. This is strong validation the core will function as predicted, and our prototype testing will continue well ahead of SEAWOLF operations.

While prototype testing remains an important facet of ensuring plant safety, the experience of more than 40 years in which our nuclear ships have traveled more than 100,000,000 miles also supports our assessments for the advanced fleet reactor. For example, the control rod drive mechanisms are similar to those of the SSN 688 Class. Particularly pertinent is experience from fully depleting the prototype reactors for NARWHAL (SSN 671) and TRIDENT missile submarines.

PROTOTYPE INACTIVATION

Mr. Myers. As you shut down the land-based reactors, why is it necessary to inactivate immediately? Can any funds be saved by delaying decommissioning?

ADM DeMars. The use of nuclear reactors mandates a responsible effort to promptly inactivate them and minimize safety and environmental liabilities at end of life. Leaving fuel in shut-down reactors longer than necessary would create major safety and environmental liabilities for the Department. Naval Reactors' stringent "cleanup-as-you-go" philosophy has prevented the costly environmental problems other DOE programs are facing.

The inactivation work also is essential to supporting operating plants in the fleet. For example, removing and examining the D2W core from the D1G land-based reactor is necessary to verify performance characteristics for a core type which is in many operating nuclear-powered submarines and cruisers. Servicing the A1W prototype will provide needed experience for the initial NIMITZ Class aircraft carrier refueling.

Inactivation work currently is underway. Accomplishing this work progressively from plant to plant at each site optimizes the use of qualified servicing personnel and their growing experience. We can not save funds by deferring inactivations. This would increase future costs due to demobilizing, remobilizing and retraining the servicing work force and incurring interim "caretaker" costs. Moreover, delaying the inactivation work would jeopardize the Naval Nuclear Propulsion Program's reputation for safety and environmental responsibility. A loss of public and worldwide confidence would put at risk acceptance of U.S. nuclear-powered ships which is essential to continuing their vital National defense role.

NUCLEAR PROGRAM RECRUITING

Mr. Myers. With the Navy downsizing, are you still able to attract sufficient personnel for nuclear programs?

ADM DeMars. The retention rate of nuclear-trained junior officers has dropped to the lowest level in over ten years, and a shortfall remains of mid-grade, Lieutenant Commander to Captain, nuclear-trained officers. Recruiting trends for enlisted personnel in FY 1994 and FY 1995 indicate a significant reduction in the number of available recruits for the nuclear program. Continuation of special pay programs is essential to recruit and retain the high quality personnel needed for the demanding nuclear program and ensure fleet support.

The technical training and discipline received in the Navy make nuclear officers and enlisted personnel attractive to the civilian sector. This situation is exacerbated in an era of downsizing when a future in the Navy seems less certain to many of these people. Bonus programs have been very successful in offsetting this pull from the outside.

For officers, Nuclear Officer Incentive Pay (NOIP) facilitates retention of personnel in a critical area. While there are no specific special pay programs for nuclear-trained enlisted personnel, they are eligible by virtue of their specialty for several all-Navy special pay programs, including the Enlistment Bonus, Selective Reenlistment Bonus, and Special Duty Assignment Pay. These programs provide monetary retention incentive and inducement to qualified personnel to volunteer for extremely demanding duties.

SPENT FUEL

Mr. Myers. What is your role in developing a final repository for naval spent nuclear fuel?

ADM DeMars. We strongly support DOE efforts to develop, site, construct and operate a permanent geologic repository for disposing of commercial and naval spent nuclear fuel. I am working with DOE to ensure Naval spent fuel meets necessary requirements for disposal in a geologic repository. For example, we are participating in a DOE environmental impact statement evaluating a multi-purpose canister to be used for storing, transporting, and disposing of spent fuel in the repository. This EIS is an important first step in establishing how spent fuel can be managed in containers suitable for final disposal.

Mr. Myers. In your statement you mention serious consequences for defueling and refueling work if shipments of naval spent fuel to Idaho are delayed beyond June. Could you expand on this situation?

ADM DeMars. By June, virtually all our shipping containers will be in use, and there will be no place to store additional spent fuel. If we were unable to begin shipping immediately, we would be unable to empty containers and support shipyard work. The Navy would have to delay five submarine and one cruiser defueling currently scheduled to start in October.

The Navy would also be unable to empty a refueling support barge at Newport News Shipbuilding scheduled for use in refueling USS NIMITZ. This would delay refurbishment and reconfiguration of the barge and ultimately delay completion of USS NIMITZ refueling and her return to the fleet. In October 1994, the Secretary of Defense certified that such a delay would be a threat to national security.

A lengthy delay in resuming shipments would result in additional adverse impacts. Delays in the NIMITZ schedule would in turn create delays in refueling other NIMITZ-class aircraft carriers. Thousands of jobs would be lost at shipyards during an extended injunction. The failure to defuel our warships would also call into question our national commitment to safe operation of nuclear-powered ships, jeopardizing our reputation and our ability to operate worldwide.

Finally, we would no longer be able to examine naval spent fuel, a critical part of ensuring safe operation of existing reactors and increasing lifetime in design of new reactors. These examinations would no longer be possible as the Naval Reactors Facility in Idaho has unique facilities for this purpose.

NAVAL NUCLEAR INDUSTRIAL BASE

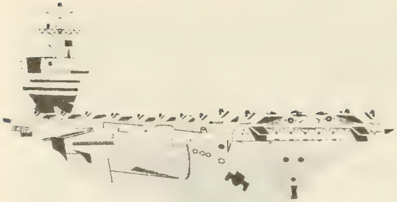
Mr. Myers. What is the status of the naval nuclear industrial base?

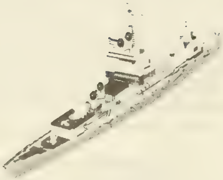
ADM DeMars. Where the Navy once had multiple suppliers for each major sector of the nuclear industrial base, there now is only one; and even these remaining suppliers are now threatened. Nuclear suppliers have witnessed the demise of the civilian nuclear industry, early shutdown of SSN 688 and TRIDENT construction, and repeated cutbacks in the SEAWOLF program. There have been no submarine reactor plant component shipsets ordered since 1989. The only shipset of reactor plant components ordered this decade was the CVN 76 component order in fiscal year 1993.

These suppliers are almost totally dependent on Naval nuclear work. There is no civilian nuclear component industry to maintain the Naval nuclear industrial base. Moreover, Navy nuclear suppliers are at a disadvantage in trying to expand into commercial markets because quality control, security and work production procedures essential to meet Naval nuclear requirements generally prevent these firms from competing successfully with firms geared for less sophisticated civilian work. In addition, there is no civilian demand for quiet, compact, shock-resistant nuclear propulsion systems which would keep skilled designers and production workers proficient. This is a distinct difference from the aerospace, electronics, and ground vehicle industries from which DOD buys many of its weapon systems.

Key to survival of the nuclear industrial base is the advanced procurement of lead ship New Attack Submarine reactor plant components in FY 1996 to support an FY 1998 start. Loss of the FY96 shipset likely would be the final straw for many key suppliers, leaving them virtually no backlog and little prospect for future Naval nuclear business.

If lost, the nuclear industrial capability would be extremely costly and time consuming to re-establish, if possible at all. Developing new suppliers with inexperienced people across the entire spectrum of the industry would be overwhelming. Even with a greatly reduced force level, the Navy needs to start building attack submarines at the rate of one per year within the next several years and then ramp up to two per year. To ensure an efficient, stable industry and assure the ability to support Navy commitments, the nuclear industrial base needs a commitment to long-term steady production.

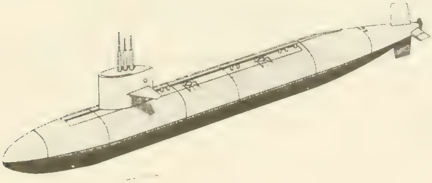




100,000,000 Miles
Safely Steamed On Nuclear Power

THE UNITED STATES
NAVAL NUCLEAR PROPULSION PROGRAM

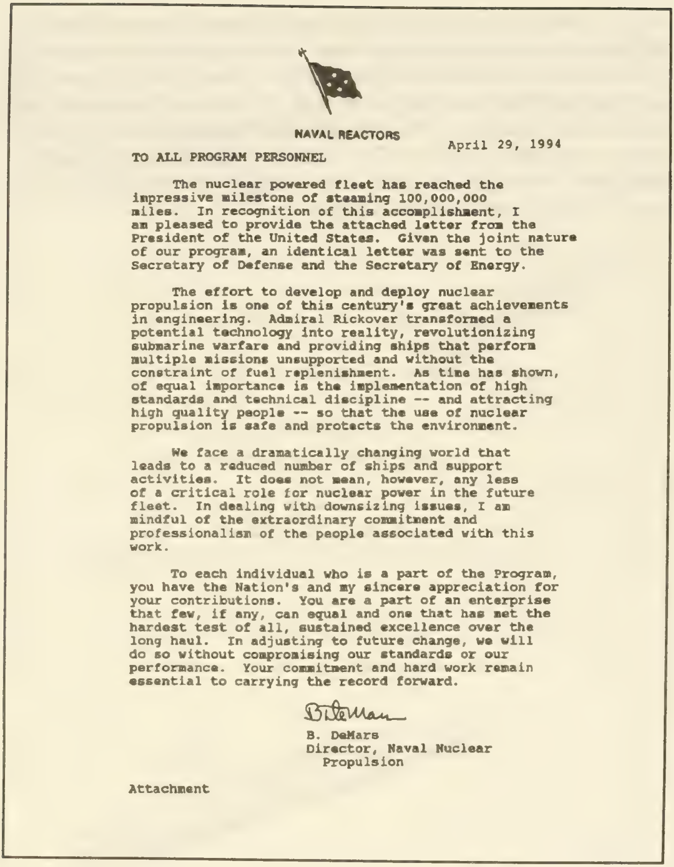
JANUARY 1955 - APRIL 1994



U.S. DEPARTMENT
OF ENERGY

U.S. DEPARTMENT
OF THE NAVY

In April 1994, the U.S. Navy's nuclear-powered fleet steamed its 100 millionth mile on nuclear power. This presented an opportunity for the many people who contributed to this accomplishment to look back on their work with pride and an occasion for recognition of those contributions. The President congratulated the program, as did many other leaders. This booklet documents their expressions and chronicles the state of the program upon accomplishment of the 100 million mile milestone.



NAVAL REACTORS

April 29, 1994

TO ALL PROGRAM PERSONNEL

The nuclear powered fleet has reached the impressive milestone of steaming 100,000,000 miles. In recognition of this accomplishment, I am pleased to provide the attached letter from the President of the United States. Given the joint nature of our program, an identical letter was sent to the Secretary of Defense and the Secretary of Energy.

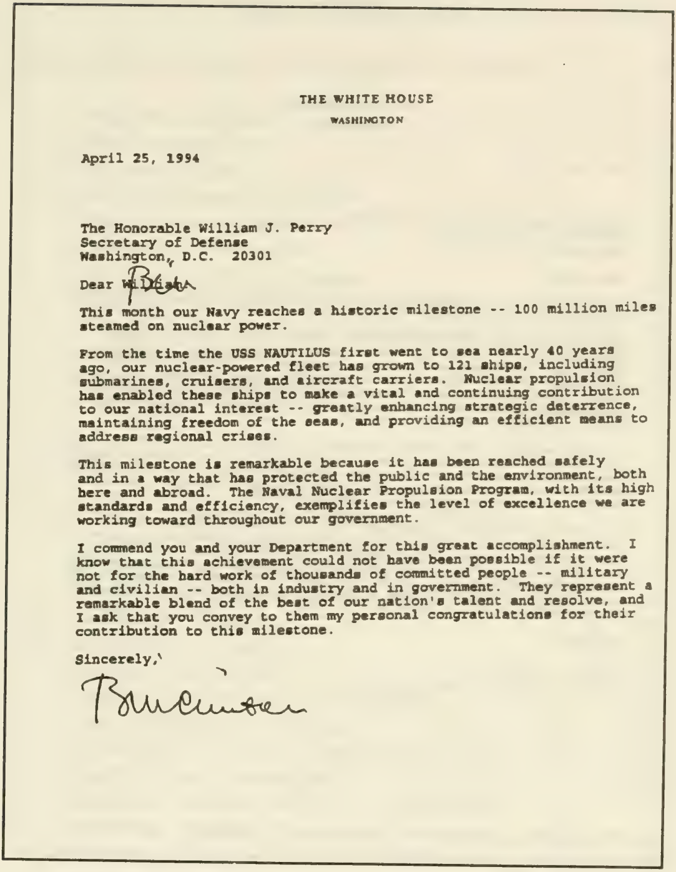
The effort to develop and deploy nuclear propulsion is one of this century's great achievements in engineering. Admiral Rickover transformed a potential technology into reality, revolutionizing submarine warfare and providing ships that perform multiple missions unsupported and without the constraint of fuel replenishment. As time has shown, of equal importance is the implementation of high standards and technical discipline -- and attracting high quality people -- so that the use of nuclear propulsion is safe and protects the environment.

We face a dramatically changing world that leads to a reduced number of ships and support activities. It does not mean, however, any less of a critical role for nuclear power in the future fleet. In dealing with downsizing issues, I am mindful of the extraordinary commitment and professionalism of the people associated with this work.

To each individual who is a part of the Program, you have the Nation's and my sincere appreciation for your contributions. You are a part of an enterprise that few, if any, can equal and one that has met the hardest test of all, sustained excellence over the long haul. In adjusting to future change, we will do so without compromising our standards or our performance. Your commitment and hard work remain essential to carrying the record forward.

B. DeMars
Director, Naval Nuclear
Propulsion

Attachment



THE WHITE HOUSE
WASHINGTON

April 25, 1994

The Honorable William J. Perry
Secretary of Defense
Washington, D.C. 20301

Dear ~~William~~ Bill

This month our Navy reaches a historic milestone -- 100 million miles steamed on nuclear power.

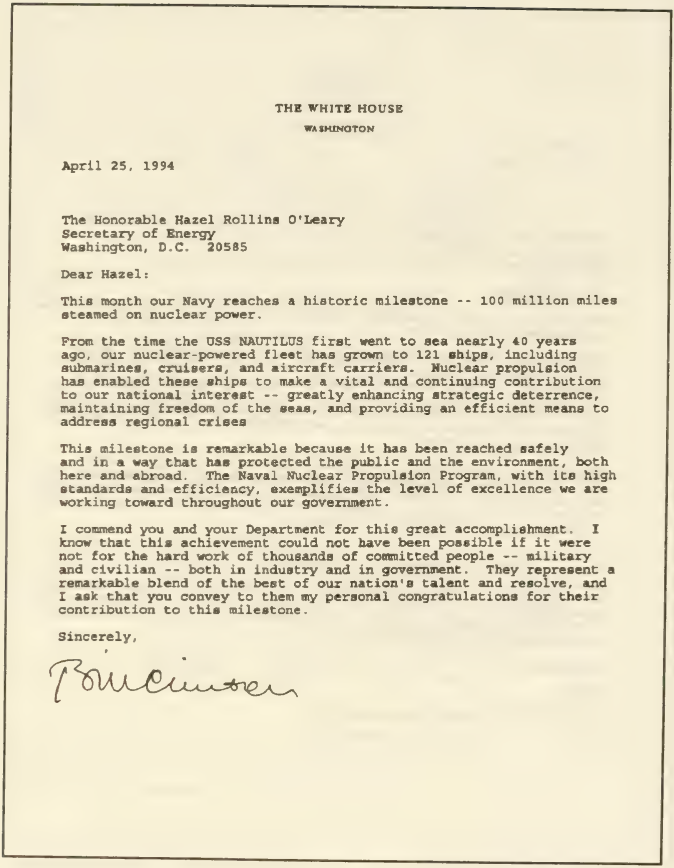
From the time the USS NAUTILUS first went to sea nearly 40 years ago, our nuclear-powered fleet has grown to 121 ships, including submarines, cruisers, and aircraft carriers. Nuclear propulsion has enabled these ships to make a vital and continuing contribution to our national interest -- greatly enhancing strategic deterrence, maintaining freedom of the seas, and providing an efficient means to address regional crises.

This milestone is remarkable because it has been reached safely and in a way that has protected the public and the environment, both here and abroad. The Naval Nuclear Propulsion Program, with its high standards and efficiency, exemplifies the level of excellence we are working toward throughout our government.

I commend you and your Department for this great accomplishment. I know that this achievement could not have been possible if it were not for the hard work of thousands of committed people -- military and civilian -- both in industry and in government. They represent a remarkable blend of the best of our nation's talent and resolve, and I ask that you convey to them my personal congratulations for their contribution to this milestone.

Sincerely,

Bill Clinton



THE WHITE HOUSE
WASHINGTON

April 25, 1994

The Honorable Hazel Rollins O'Leary
Secretary of Energy
Washington, D.C. 20585

Dear Hazel:

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From the time the USS NAUTILUS first went to sea nearly 40 years ago, our nuclear-powered fleet has grown to 121 ships, including submarines, cruisers, and aircraft carriers. Nuclear propulsion has enabled these ships to make a vital and continuing contribution to our national interest -- greatly enhancing strategic deterrence, maintaining freedom of the seas, and providing an efficient means to address regional crises

This milestone is remarkable because it has been reached safely and in a way that has protected the public and the environment, both here and abroad. The Naval Nuclear Propulsion Program, with its high standards and efficiency, exemplifies the level of excellence we are working toward throughout our government.

I commend you and your Department for this great accomplishment. I know that this achievement could not have been possible if it were not for the hard work of thousands of committed people -- military and civilian -- both in industry and in government. They represent a remarkable blend of the best of our nation's talent and resolve, and I ask that you convey to them my personal congratulations for their contribution to this milestone.

Sincerely,

Bill Clinton

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U.S. NAVAL NUCLEAR PROPULSION PROGRAM

Program Overview

In April 1994, somewhere in the oceans of the world, a U.S. nuclear-powered aircraft carrier, cruiser, ballistic missile submarine, or attack submarine logged the 100 millionth mile steamed by U.S. nuclear-powered warships since NAUTILUS radioed "Underway on nuclear power" on January 17, 1955. This has been accomplished without a nuclear accident, or harm to the public or environment — a tribute to the thousands of people who design, build, operate, maintain, and dispose of our nuclear-powered warships.

NAUTILUS revolutionized naval warfare. It was also a technological revolution, a rare opportunity when the doors suddenly open to a completely new technology with vast civilian and military potential.

After World War II, the U.S. took a lead in naval nuclear propulsion that it has never relinquished. Time and again, the unlimited propulsion endurance of U.S. nuclear-powered aircraft carriers has paid off in crisis situations. Despite impressive scientific and technological resources, the highest priority, and superior numbers, Soviet nuclear-powered submarines were never able to surpass those of the United States; nor were they designed, built, and operated with the same careful attention to health, safety, and the environment. Today, the same U.S. submarine characteristics of stealth, mobility, and firepower are proving invaluable in trouble spots around the world.

Admiral Hyman G. Rickover developed the U.S. Naval Nuclear Propulsion Program from the ground up. He insisted that nuclear technology required its own special discipline which must be adhered to — a discipline that is in effect to this day. The result has been a nuclear program with over 4300 reactor years of safe operation, without harm to the public or to the environment.

The commitment to excellence was captured in the charter for the Naval Nuclear Propulsion Program set forth by the President in Executive Order 12344 dated February 1, 1982, which recognized the "crucial importance to national security of the Naval Nuclear

Propulsion Program..." and the need to preserve "...the basic structure, policies, and practices developed for this program in the past and assuring that the program will continue to function with excellence..." This charter also recognized the well developed presence of the program as a part of both the Navy and the Department of Energy. Congress codified the program's charter by enacting a provision in Public Law 98-525 signed October 19, 1984, which requires Congressional approval of any changes to the Executive Order.

USS TAUTOG (SSN 639)

The Program Today

Today, the U.S. Naval Nuclear Propulsion Program consists of 119 ships with 145 naval reactors. To appreciate the size of this activity, there are 109 civilian power reactors operating in the United States. The program has designed, built, and operated more than 30 different reactor designs, and has safely conducted over 300 defuelings/refuelings.

U.S. nuclear-powered warships operate in more than 150 ports and harbors in over 50 foreign countries and dependencies around the world. The ability to operate in so many places stems from the program's proven, long-term environmental and safety record.

USS DWIGHT D. EISENHOWER (CVN 69) IN THE SUEZ CANAL

Program Origins

Following World War II, attention turned from solely nuclear weapons applications to other possible uses of nuclear power. Admiral Rickover was among a limited few who fully recognized the potential of nuclear power applied to submarines.

In both World Wars, submarines exacted a heavy toll. Even the possibility of a submarine nearby could cripple maritime shipping and fleet operations. Unlike combustion engines, nuclear power requires no oxygen and generates no exhaust — a non-air breathing engine would make the already potent submarine into a true submersible. With nuclear power, the Navy would be able to use conventional steam propulsion, rather than short-lived electric batteries, for submerged operations.

Nuclear propulsion could also free aircraft carriers and other surface ships from dependence on fuel oil and tankers. The same reactor principles could provide civilian electrical power without consuming fossil fuel reserves.

After reviewing Manhattan Project work, then-Captain Hyman G. Rickover obtained Navy, Atomic Energy Commission, and Congressional support to develop and build the world's first nuclear-powered submarine. NAUTILUS went to sea January 17, 1955, giving the U.S. a lead in undersea warfare that has never been relinquished.

USS NAUTILUS (SSN 571)

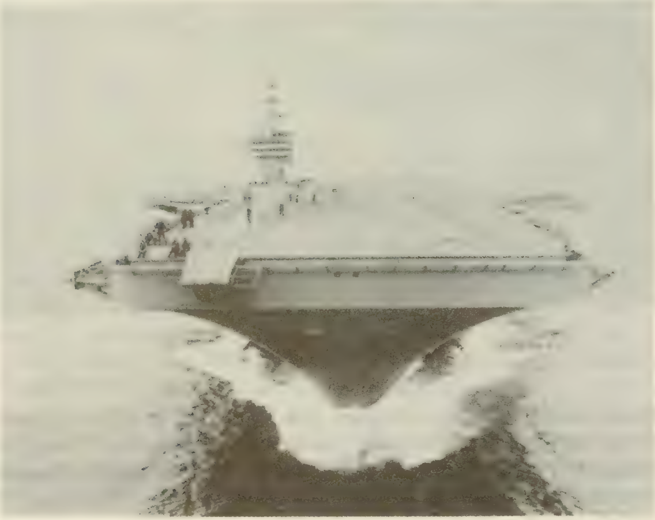
Since NAUTILUS, the program has continued to produce ever more capable, more reliable nuclear propulsion plants for the Navy's warships. Our most capable aircraft carriers, all our attack submarines, and the most invulnerable of our strategic deterrent forces are propelled by nuclear power.

Nuclear-powered Warships

From NAUTILUS to present, the U.S. has built, or is building, 191 submarines; 9 cruisers; 9 aircraft carriers; and 1 deep submergence research vessel (NR 1).

Over 40 percent of the Navy's major combatant ships are nuclear-powered, consisting of:

- Seven nuclear-powered aircraft carriers plus two more under construction. The propulsion endurance of these ships represents a critically important capability in responding quickly to crises in far-off places. With the reactor core providing over 20 years of ship operating time, these ships have more room for aviation fuel, munitions, and propulsion fuel for non-nuclear escorts.

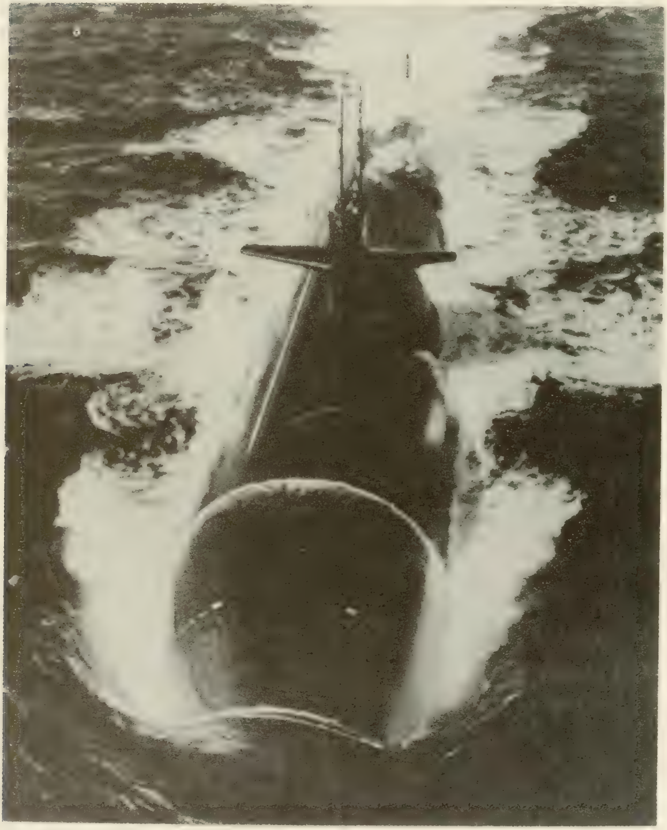


USS DWIGHT D. EISENHOWER (CVN 69)

- Fourteen OHIO Class TRIDENT strategic missile submarines plus four still under construction. The General Accounting Office reports that TRIDENTs are the most cost effective element of our strategic forces. Their quiet nuclear power plants make these ships virtually undetectable and invulnerable.

USS KENTUCKY (SSBN 737) LAUNCHING AT ELECTRIC BOAT

- Eighty-nine attack submarines (SSNs), plus nine still under construction. Attack submarines are the weapon of choice against surface ships and other submarines; they also gather intelligence, lay mines, insert and extract Special Forces, and make precision strikes against targets far inland with Tomahawk cruise missiles.



USS HONOLULU (SSN 718)

- Seven nuclear-powered cruisers which serve as part of nuclear carrier task forces and on independent missions.

USS VIRGINIA (CGN 38)

Progress in U.S. Naval Nuclear Propulsion Technology

The focus of the U.S. Naval Nuclear Propulsion Program has been on improving the military characteristics of nuclear-powered warships, improving reliability, and reducing maintenance while maintaining high standards for safety, health, and protection of the environment. Significant gains have been made.

Reactor core life has increased from 2 years for the first NAUTILUS core to the full life of the proposed new attack submarine — over 30 years. This provides obvious military and cost benefits, and dramatically reduces the amount of radioactive waste and personnel radiation exposure to shipyard personnel over the life of the ship.

Critical hardware, such as reactor control rod drive mechanisms and reactor coolant pumps, once heavy maintenance items, now routinely last the life of the ship with minimal maintenance.

Transmitted noise, inherent in early submarine designs, has reduced dramatically through increasingly sophisticated analysis, design, fabrication, and testing of equipment, systems, and ships. Where U.S. submarines could once be detected hundreds of miles distant, today's newest designs will be almost impossible to detect acoustically.

Instrument accuracy has improved by a factor of 5; reliability by a factor of 10. This allows designers to extract more performance without sacrificing safety margin.

Dramatic improvements in instrumentation, materials, and core design translate into increased power density, plant simplification, and weight reduction for today's naval nuclear propulsion plants.

Concern for Personnel

Concern for the safety and health of people, both operators and the public, has been a hallmark of the program since its beginning. Efforts to reduce radiation exposure to personnel have been continuous. Through redesigned equipment, sophisticated water chemistry control, engineered work procedures, and improved materials, total program personnel radiation exposure per ship has been reduced by a factor of 10 from the 1970's to the 1980's.

- Personnel who serve aboard nuclear-powered submarines, on average, receive less radiation exposure annually than civilians living ashore.

- Epidemiology studies of nuclear propulsion shipyard workers, conducted by the Johns Hopkins University found no evidence of cancer caused by their on-the-job exposure to ionizing radiation.

- Personnel radiation exposures are well below federal standards; no one in the program has ever exceeded the applicable annual federal exposure limit.

Concern for the Environment

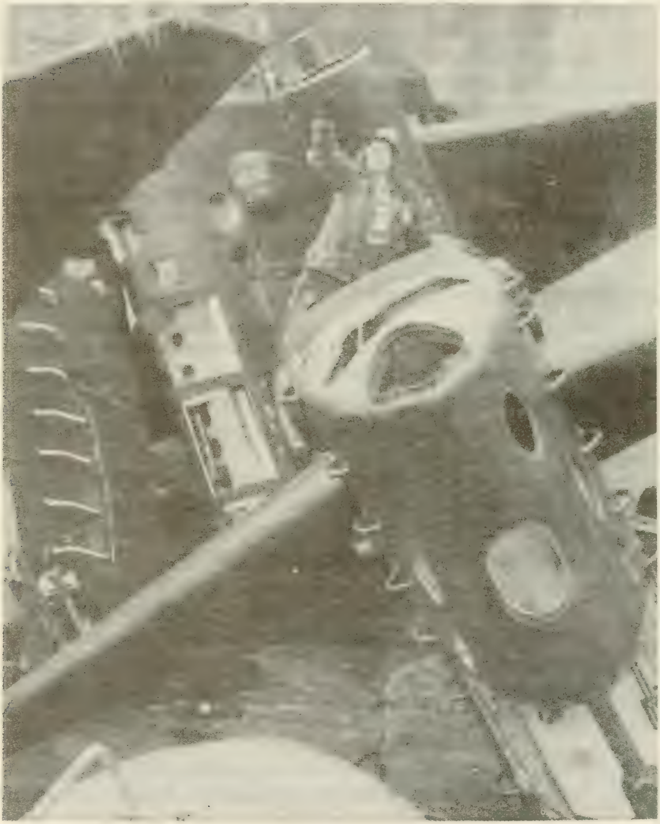
The environmental story is just as good. Releases of radioactivity to the environment are negligible, fractions of what other nuclear activities release in conformance with Nuclear Regulatory Commission regulations.

- Total radioactive airborne or waterborne releases to the environment from all the program's ships and shore-based activities are negligible; in total they compare with a single typical commercial nuclear power station.

- The program has not generated, at any site, environmental contamination that warrants accelerated cleanup under Superfund. This is a result of the program's practice of protecting the environment long before this became a national priority.

- The program has been subject to Environmental Protection Agency and state regulator inspections in other areas of environmental performance without any significant deficiencies. The program received a clean bill of health from the General Accounting Office for environmental, health, and safety practices.

The program cleans up after itself, recycling over 80 percent of each nuclear-powered submarine at the end of its service life. The remainder is properly disposed of in accordance with state and Environmental Protection Agency regulations.



SHIP RECYCLING AT PUGET SOUND

Contributions Beyond National Defense

As part of President Eisenhower's "Atoms For Peace" program, the U.S. Naval Nuclear Propulsion Program designed, built, and successfully operated the Nation's first civilian nuclear power plant in Shippingport, Pennsylvania.

Design details, manufacturing specifications, and operating and maintenance procedures were broadly disseminated to the scientific and engineering community, as well as to the public via some 2300 technical documents and through symposia. The Shippingport reactor established the technology base for the pressurized water reactor industry that followed at home and abroad.

SHIPPINGPORT ATOMIC POWER STATION

The nuclear industrial base is a major spin-off from the program's reactor work. This new technology required far tougher specifications and standards for design, manufacture, and testing. Interested in the commercial potential, the principal U.S. manufacturers of heavy machinery re-tooled their plants and organizations to provide the discipline and high-quality products the program demanded. The program had to develop a viable zirconium and hafnium industry from scratch; there was no other demand for these exotic materials. It wrote and published handbooks, detailed charts of the nuclides, and over 5000 technical reports. Eighty-three thousand Navy operators trained by the U.S. Naval Nuclear Propulsion Program have been a major source of reactor operators for the civilian nuclear industry.

The program led the way in advanced nuclear fuel systems; in the zirconium-clad, uranium oxide fuel system; nuclear welding/inspection techniques; nuclear manufacturing process controls; core protection; containment; analytical techniques and computing; water chemistry control; refueling methods; reactor disposal; decontamination; and burnable poisons.

Program Approach to Nuclear Propulsion Plant Design

In the aftermath of the Three Mile Island commercial nuclear power plant accident, the President's Commission on the Accident at Three Mile Island (Kemeny Commission) and the House Science and Technology Committee each held extensive hearings which highlighted some important principles of the U.S. Naval Nuclear Propulsion Program's success. Among these are:

- Demand technical excellence.
- Carefully select and train personnel; promote continuity.
- Insist on personal responsibility.
- Face facts honestly.
- Design, build, and operate to prevent accidents.
- Use standard plant designs; emphasize simplicity.
- Analyze and test extensively; use full-scale mockups.
- Strictly control manufacturing and servicing.
- Follow detailed operating/maintenance procedures.
- Insist on formal documentation; conduct frequent audits.

Stewardship

The U.S. Naval Nuclear Propulsion Program is managed by a small, highly focused, and experienced staff that provides tight technical and financial oversight and control over the work. The program operates with modest resources. Its Bettis and Knolls Atomic Power Laboratories, combined, are smaller than the smallest Department of Energy nuclear weapons laboratory. The credo is technical excellence while safeguarding Government funds. Maintaining a team of highly experienced experts has been central to properly controlling this technology.

The commitment to experience and solid technical understanding has always been personified in the program's Director. Admiral Rickover started the program when nuclear reactor technology was

ADMIRAL RICKOVER INSPECTING USS NAUTILUS in its infancy. When he left the program after 34 years as Director in 1982, he was relieved by Admiral Kinnaird R. McKee. Admiral McKee had 24 years of experience in naval nuclear propulsion when he assumed the Directorship. He was relieved by Admiral Bruce DeMars who assumed the Directorship with 28 years of experience in naval nuclear propulsion.

The program relies extensively on private industry to perform work, but maintains close technical direction and control. The program developed the U.S. nuclear industrial base which has repeatedly had to expand and contract as Navy and civilian nuclear work has waxed and waned.

Building as many as 14 submarines in a single year during the early 1960's, manufacturers honed their skills for the civilian nuclear market. When demand for civilian nuclear power plants collapsed in the mid-1970's, naval nuclear propulsion sustained U.S. nuclear design and manufacturing capability. In the early 1990's, faced with sharp cutbacks in naval nuclear construction, the program took action to dramatically downsize the nuclear component industrial base.

The program also triggered a variety of cost-saving decisions; for example, closing the Savannah River naval fuel plant; shutting down six of eight reactor prototype facilities; shutting down the Nation's only facility for production of highly enriched uranium; and stopping the reprocessing of spent naval nuclear fuel.

The entire naval nuclear propulsion infrastructure was developed in a way that would protect our technological advantage and discourage proliferation of naval nuclear propulsion technology to other nations — all without resorting to costly, conventional security measures except in the most sensitive areas. This was possible by using dedicated facilities and highly trained personnel, and other forms of special handling that significantly reduce the risk of compromise without the more cumbersome aspects of classification. The changing world landscape, growing regional instabilities, and efforts by other nations to develop a nuclear submarine capability underscore the importance of protecting this unique technology.

Credibility and the Public

The program recognized, early on, that nuclear-powered ships would be constantly in the public eye — manned by continuously changing crews; served by a widespread industrial work force; entering ports, at home and abroad. In this environment, the program decided to publish information that would allow U.S. citizens and foreign governments to assess the impact of the U.S. Naval Nuclear Propulsion Program on the public and on the environment.

Long before there was any public demand for this kind of information, the program began routinely reporting to Congress, and to the public, data on releases of radioactivity, occupational radiation exposure, waste disposal, environmental protection, safety, and other aspects of naval nuclear propulsion. This information documents the program's negligible impact on public health and safety and on the environment.

Conclusion

The 100 million miles safely steamed on nuclear power is a notable accomplishment. Despite changing world conditions, demands on this technology have not lessened. The U.S. Naval Nuclear Propulsion Program continues to function with excellence. The credit belongs to the thousands of highly skilled and dedicated scientists, engineers, workers, and operators who have made this possible.

CELEBRATING THE 100 MILLION MILE MILESTONE ABOARD
USS GEORGE WASHINGTON (CVN 73)

The Committee on Armed Services of the United States Senate marked the accomplishment of 100 million miles steamed on nuclear power in its 1994 report:

NAVAL NUCLEAR PROPULSION

The U.S. Naval Nuclear Propulsion Program, a joint program of the Department of Energy and the Department of the Navy, has recently achieved a major milestone. Nuclear-powered surface ships and submarines have just steamed their 100 millionth mile on nuclear power without a single nuclear accident or harm to the public or the environment. This is a remarkable achievement, and the committee congratulates the men and women of the Naval Reactors Program for their dedication and exemplary work.

Since the NAUTILUS, the first nuclear-powered submarine, got underway almost 40 years ago, the U.S. Naval Nuclear Propulsion Program has designed, built, operated, and maintained the surface ships and submarines that have now steamed 100 million miles. This figure represents over 4,300 reactor years of safe operation, almost as much as the world's total experience in reactor years of civilian nuclear power plants and more than twice that of U.S. civilian nuclear power reactors.

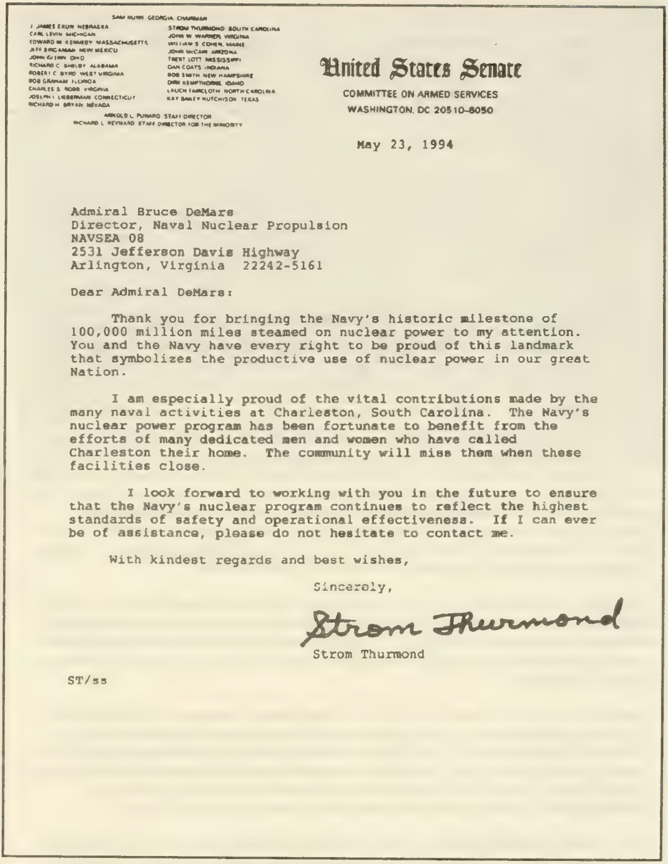
Shortly after World War II, the United States took the lead in naval nuclear propulsion, a lead that it has never relinquished. Time and again, the unlimited propulsion endurance of U.S. nuclear-powered aircraft carriers has paid off in crisis situations. Even at the height of the Cold War, and despite impressive scientific and technological resources and superior numbers, Soviet submarines were never able to surpass those of the United States; nor were they designed, built, or operated with the same careful attention to health, safety, and the environment that are given to U.S. submarines. Today, the same U.S. submarine characteristics of stealth, mobility, and firepower are proving invaluable in trouble spots around the world.

Admiral Hyman G. Rickover built the U.S. naval nuclear propulsion program from the ground up. He insisted that nuclear technology have its own special discipline that must be adhered to; a basic tenet of the program to this day. The resulting safety record, 4,300 reactor years of safe operation, without harm to the public or the environment is the envy of civil and military reactor programs worldwide.

The U.S. Naval Nuclear Propulsion Program provides excellent examples of duel use technology. While developing naval nuclear propulsion, the program also published basic reference information on nuclear power. It built and successfully operated the Shippingport Atomic Power Station, the nation's first civilian nuclear power generation plant. Shippingport technology including fuel systems, design details, specifications, and operating procedures served as the technology base for civilian pressurized water reactor plants at home and abroad.

The U.S. Naval Nuclear Propulsion Program is synonymous with excellence. Executive Order 12344 dated February 1, 1982 and Public Law 98-525 recognized the "crucial importance to national security of the Naval Nuclear Propulsion Program..." and of preserving "...the basic structure, policies, and practices developed for this program in the past and assuring that the program will continue to function with excellence...".

Since the NAUTILUS, the Naval Nuclear Propulsion Program has built or is in the process of building over 210 nuclear powered vessels. Today, over 40 percent of the Navy's major combatant ships are nuclear-powered. The achievements of the men and women who have been associated with this program from the days of Admiral Rickover to the present have made unique and valuable contributions to U.S. national security.



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RICHARD L REYNARD STAFF DIRECTOR FOR THE MINORITY

United States Senate
COMMITTEE ON ARMED SERVICES
WASHINGTON, DC 20510-6050

May 23, 1994

Admiral Bruce DeMars
Director, Naval Nuclear Propulsion
NAVSEA 08
2531 Jefferson Davis Highway
Arlington, Virginia 22242-5161

Dear Admiral DeMars:

Thank you for bringing the Navy's historic milestone of 100,000 million miles steamed on nuclear power to my attention. You and the Navy have every right to be proud of this landmark that symbolizes the productive use of nuclear power in our great Nation.

I am especially proud of the vital contributions made by the many naval activities at Charleston, South Carolina. The Navy's nuclear power program has been fortunate to benefit from the efforts of many dedicated men and women who have called Charleston their home. The community will miss them when these facilities close.

I look forward to working with you in the future to ensure that the Navy's nuclear program continues to reflect the highest standards of safety and operational effectiveness. If I can ever be of assistance, please do not hesitate to contact me.

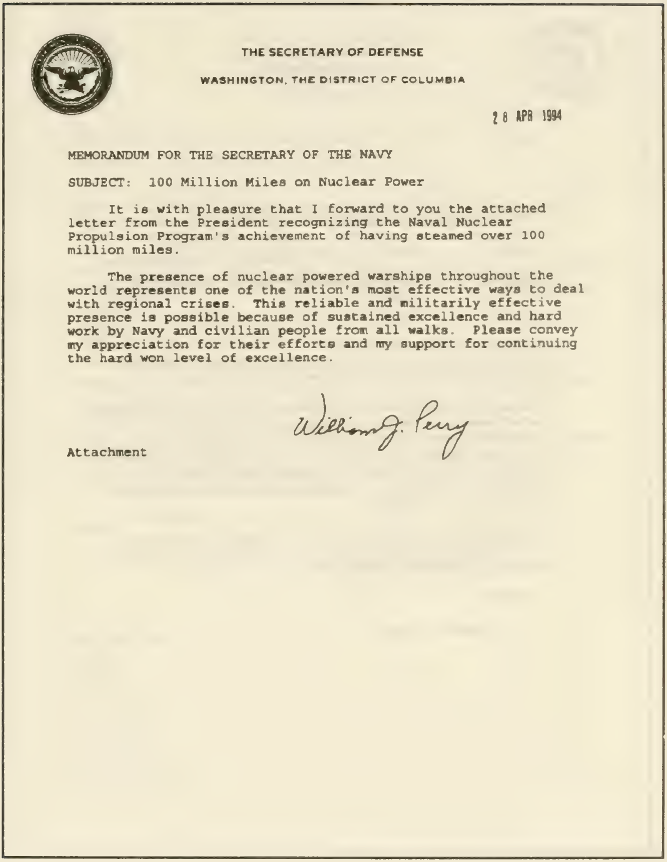
With kindest regards and best wishes,

Sincerely,

Strom Thurmond

Strom Thurmond

ST/ss



THE SECRETARY OF DEFENSE
WASHINGTON, THE DISTRICT OF COLUMBIA

28 APR 1994

MEMORANDUM FOR THE SECRETARY OF THE NAVY

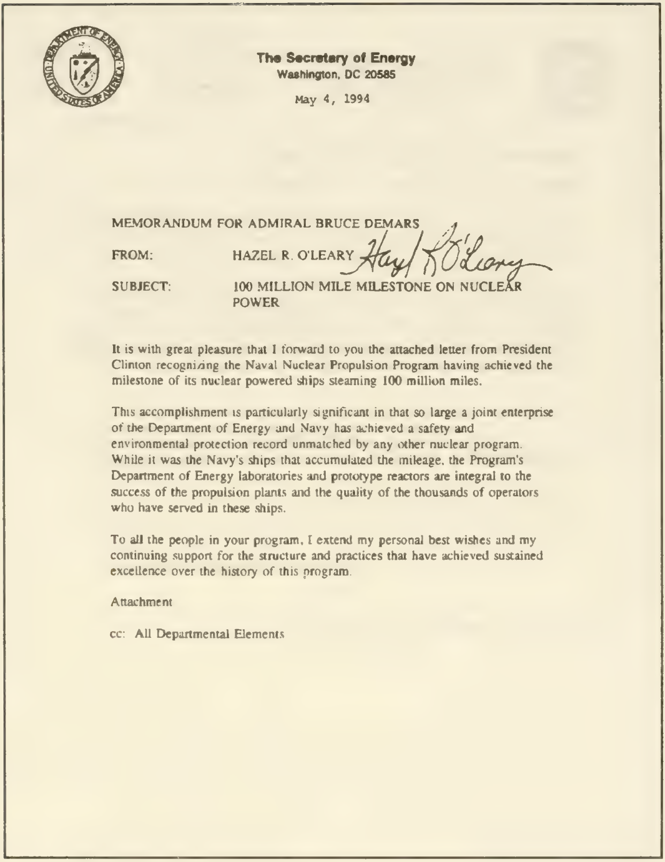
SUBJECT: 100 Million Miles on Nuclear Power

It is with pleasure that I forward to you the attached letter from the President recognizing the Naval Nuclear Propulsion Program's achievement of having steamed over 100 million miles.

The presence of nuclear powered warships throughout the world represents one of the nation's most effective ways to deal with regional crises. This reliable and militarily effective presence is possible because of sustained excellence and hard work by Navy and civilian people from all walks. Please convey my appreciation for their efforts and my support for continuing the hard won level of excellence.

William J. Perry

Attachment



The Secretary of Energy
Washington, DC 20585

May 4, 1994

MEMORANDUM FOR ADMIRAL BRUCE DEMARS

FROM: HAZEL R. O'LEARY Hazel R O'Leary

SUBJECT: 100 MILLION MILE MILESTONE ON NUCLEAR POWER

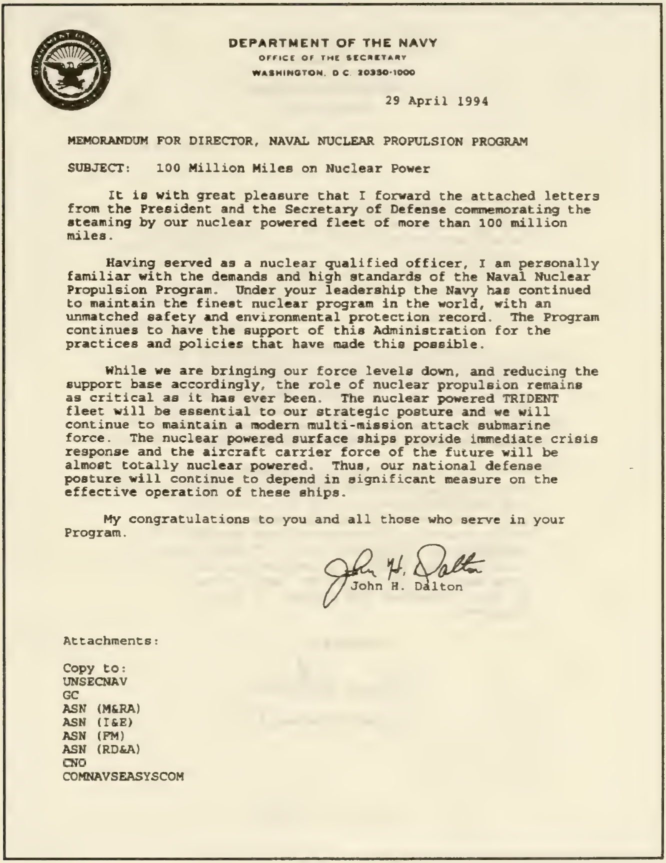
It is with great pleasure that I forward to you the attached letter from President Clinton recognizing the Naval Nuclear Propulsion Program having achieved the milestone of its nuclear powered ships steaming 100 million miles.

This accomplishment is particularly significant in that so large a joint enterprise of the Department of Energy and Navy has achieved a safety and environmental protection record unmatched by any other nuclear program. While it was the Navy's ships that accumulated the mileage, the Program's Department of Energy laboratories and prototype reactors are integral to the success of the propulsion plants and the quality of the thousands of operators who have served in these ships.

To all the people in your program, I extend my personal best wishes and my continuing support for the structure and practices that have achieved sustained excellence over the history of this program.

Attachment

cc: All Departmental Elements



DEPARTMENT OF THE NAVY
OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20350-1000

29 April 1994

MEMORANDUM FOR DIRECTOR, NAVAL NUCLEAR PROPULSION PROGRAM

SUBJECT: 100 Million Miles on Nuclear Power

It is with great pleasure that I forward the attached letters from the President and the Secretary of Defense commemorating the steaming by our nuclear powered fleet of more than 100 million miles.

Having served as a nuclear qualified officer, I am personally familiar with the demands and high standards of the Naval Nuclear Propulsion Program. Under your leadership the Navy has continued to maintain the finest nuclear program in the world, with an unmatched safety and environmental protection record. The Program continues to have the support of this Administration for the practices and policies that have made this possible.

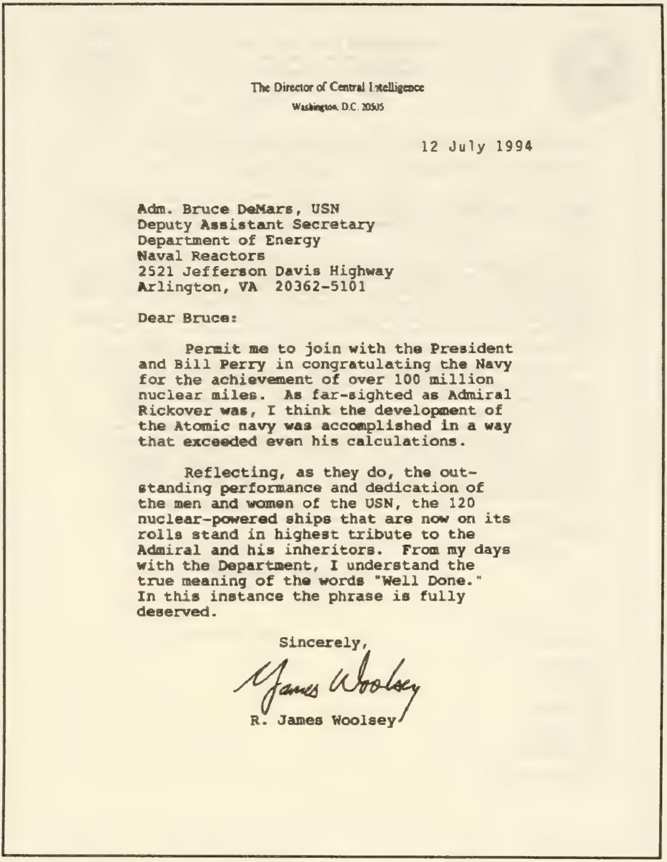
While we are bringing our force levels down, and reducing the support base accordingly, the role of nuclear propulsion remains as critical as it has ever been. The nuclear powered TRIDENT fleet will be essential to our strategic posture and we will continue to maintain a modern multi-mission attack submarine force. The nuclear powered surface ships provide immediate crisis response and the aircraft carrier force of the future will be almost totally nuclear powered. Thus, our national defense posture will continue to depend in significant measure on the effective operation of these ships.

My congratulations to you and all those who serve in your Program.

John H. Dalton
John H. Dalton

Attachments:

Copy to:
UNSECNAV
GC
ASN (M&RA)
ASN (I&E)
ASN (FM)
ASN (RD&A)
CNO
COMNAVSEASYSCOM



The Director of Central Intelligence
Washington, D.C. 20505

12 July 1994

Adm. Bruce DeMars, USN
Deputy Assistant Secretary
Department of Energy
Naval Reactors
2521 Jefferson Davis Highway
Arlington, VA 20362-5101

Dear Bruce:

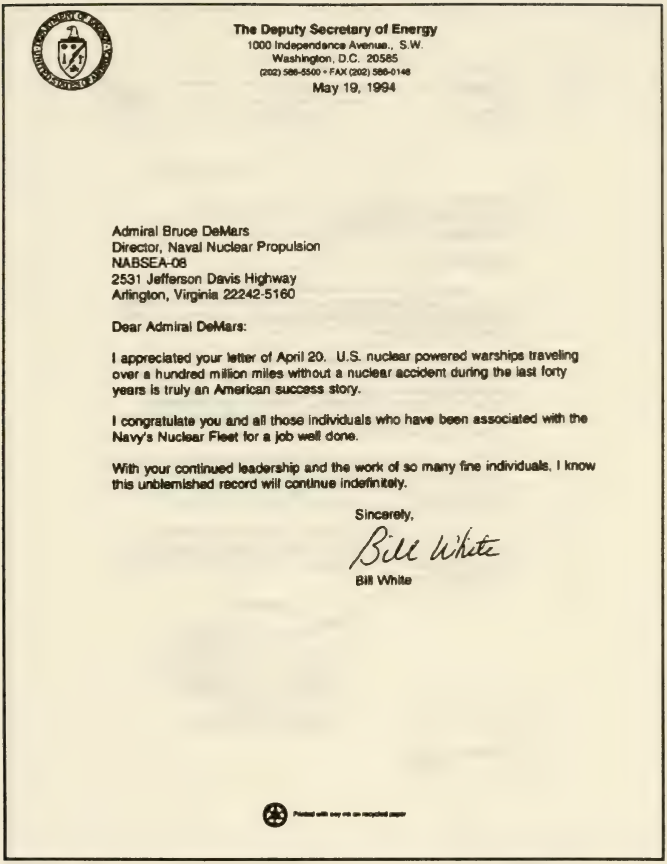
Permit me to join with the President and Bill Perry in congratulating the Navy for the achievement of over 100 million nuclear miles. As far-sighted as Admiral Rickover was, I think the development of the Atomic navy was accomplished in a way that exceeded even his calculations.

Reflecting, as they do, the outstanding performance and dedication of the men and women of the USN, the 120 nuclear-powered ships that are now on its rolls stand in highest tribute to the Admiral and his inheritors. From my days with the Department, I understand the true meaning of the words "Well Done." In this instance the phrase is fully deserved.

Sincerely,

James Woolsey

R. James Woolsey



The Deputy Secretary of Energy
1000 Independence Avenue., S.W.
Washington, D.C. 20585
(202) 586-5500 • FAX (202) 586-0148

May 19, 1994

Admiral Bruce DeMars
Director, Naval Nuclear Propulsion
NABSEA-08
2531 Jefferson Davis Highway
Arlington, Virginia 22242-5160

Dear Admiral DeMars:

I appreciated your letter of April 20. U.S. nuclear powered warships traveling over a hundred million miles without a nuclear accident during the last forty years is truly an American success story.

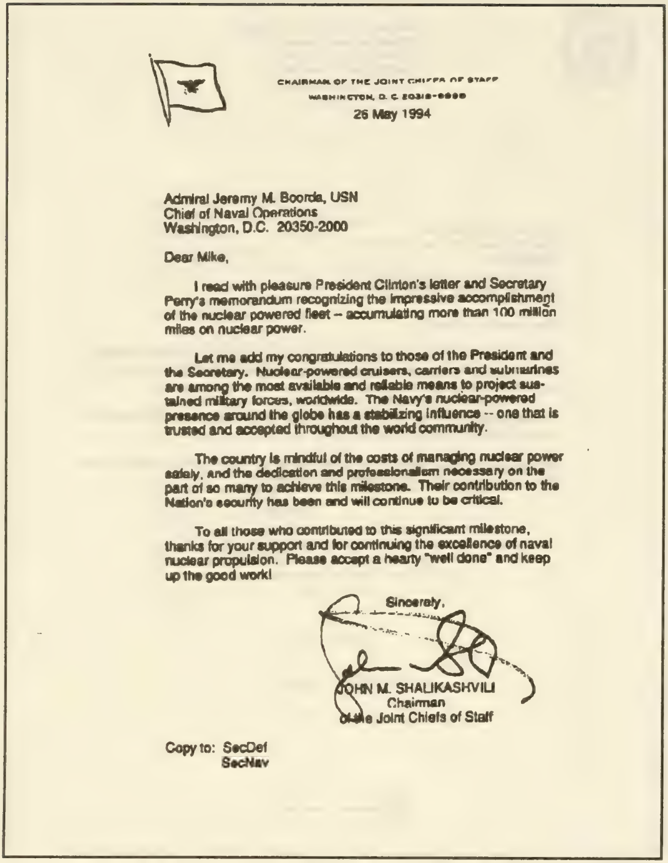
I congratulate you and all those individuals who have been associated with the Navy's Nuclear Fleet for a job well done.

With your continued leadership and the work of so many fine individuals, I know this unblemished record will continue indefinitely.

Sincerely,

Bill White

Bill White



CHAIRMAN OF THE JOINT CHIEFS OF STAFF
WASHINGTON, D.C. 20318-9999

26 May 1994

Admiral Jeremy M. Boorda, USN
Chief of Naval Operations
Washington, D.C. 20350-2000

Dear Mike,

I read with pleasure President Clinton's letter and Secretary Perry's memorandum recognizing the impressive accomplishment of the nuclear powered fleet -- accumulating more than 100 million miles on nuclear power.

Let me add my congratulations to those of the President and the Secretary. Nuclear-powered cruisers, carriers and submarines are among the most available and reliable means to project sustained military forces, worldwide. The Navy's nuclear-powered presence around the globe has a stabilizing influence -- one that is trusted and accepted throughout the world community.

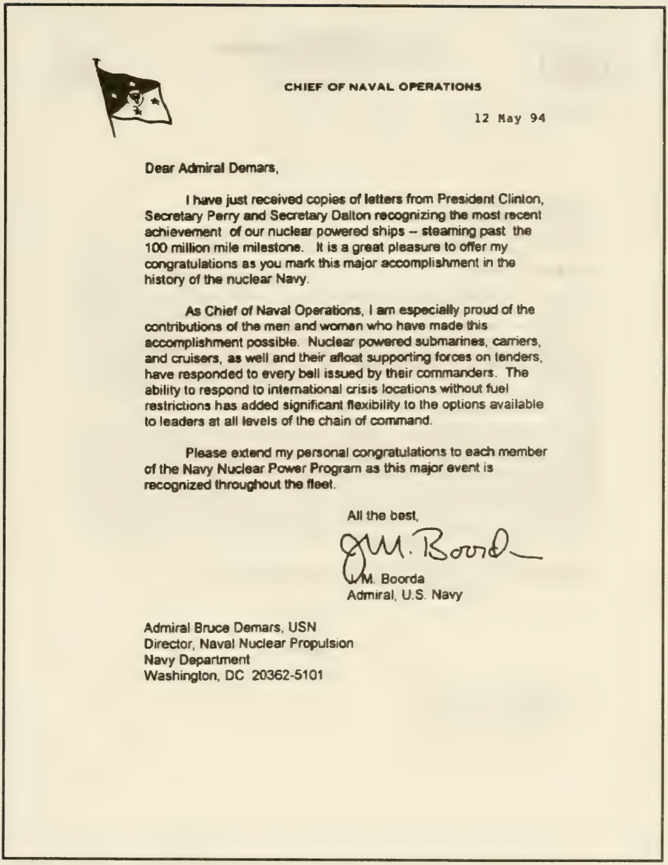
The country is mindful of the costs of managing nuclear power safely, and the dedication and professionalism necessary on the part of so many to achieve this milestone. Their contribution to the Nation's security has been and will continue to be critical.

To all those who contributed to this significant milestone, thanks for your support and for continuing the excellence of naval nuclear propulsion. Please accept a hearty "well done" and keep up the good work!

Sincerely,

JOHN M. SHALIKASHVILI
Chairman
of the Joint Chiefs of Staff

Copy to: SecDef
SecNav



CHIEF OF NAVAL OPERATIONS

12 May 94

Dear Admiral Demars,

I have just received copies of letters from President Clinton, Secretary Perry and Secretary Dalton recognizing the most recent achievement of our nuclear powered ships -- steaming past the 100 million mile milestone. It is a great pleasure to offer my congratulations as you mark this major accomplishment in the history of the nuclear Navy.

As Chief of Naval Operations, I am especially proud of the contributions of the men and women who have made this accomplishment possible. Nuclear powered submarines, carriers, and cruisers, as well and their afloat supporting forces on tenders, have responded to every bell issued by their commanders. The ability to respond to international crisis locations without fuel restrictions has added significant flexibility to the options available to leaders at all levels of the chain of command.

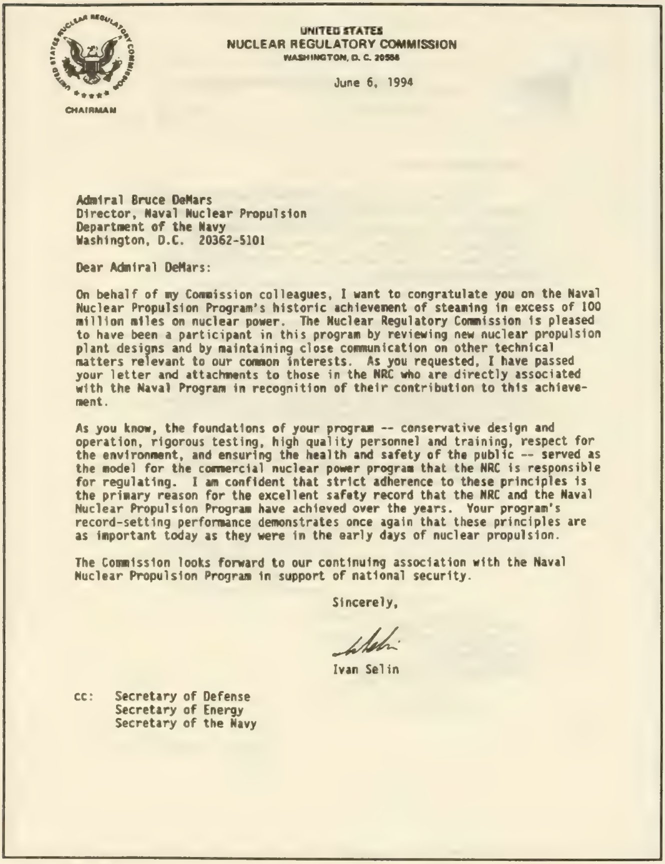
Please extend my personal congratulations to each member of the Navy Nuclear Power Program as this major event is recognized throughout the fleet.

All the best,

JM. Boorda

J.M. Boorda
Admiral, U.S. Navy

Admiral Bruce Demars, USN
Director, Naval Nuclear Propulsion
Navy Department
Washington, DC 20362-5101



CHAIRMAN

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555

June 6, 1994

Admiral Bruce DeMars
Director, Naval Nuclear Propulsion
Department of the Navy
Washington, D.C. 20362-5101

Dear Admiral DeMars:

On behalf of my Commission colleagues, I want to congratulate you on the Naval Nuclear Propulsion Program's historic achievement of steaming in excess of 100 million miles on nuclear power. The Nuclear Regulatory Commission is pleased to have been a participant in this program by reviewing new nuclear propulsion plant designs and by maintaining close communication on other technical matters relevant to our common interests. As you requested, I have passed your letter and attachments to those in the NRC who are directly associated with the Naval Program in recognition of their contribution to this achievement.

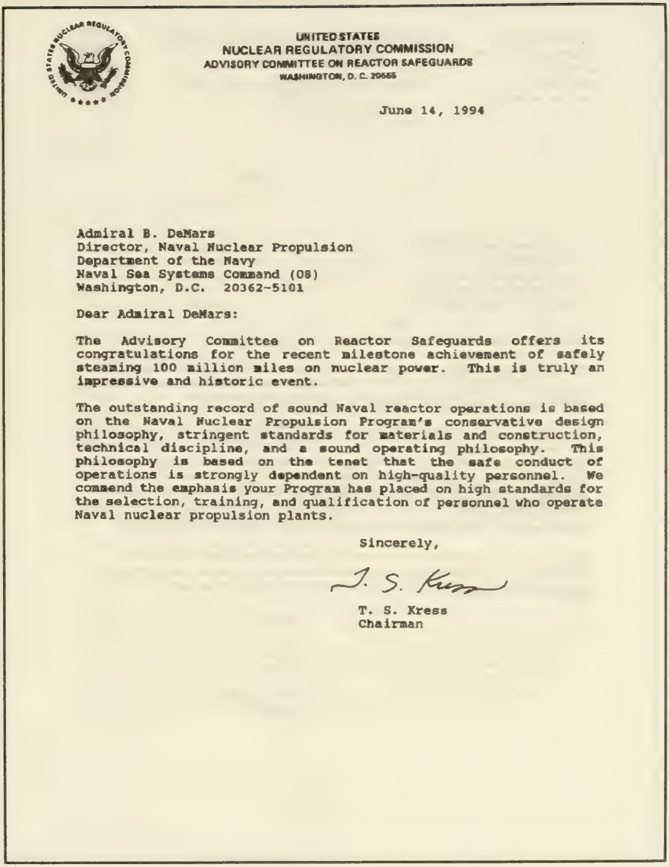
As you know, the foundations of your program -- conservative design and operation, rigorous testing, high quality personnel and training, respect for the environment, and ensuring the health and safety of the public -- served as the model for the commercial nuclear power program that the NRC is responsible for regulating. I am confident that strict adherence to these principles is the primary reason for the excellent safety record that the NRC and the Naval Nuclear Propulsion Program have achieved over the years. Your program's record-setting performance demonstrates once again that these principles are as important today as they were in the early days of nuclear propulsion.

The Commission looks forward to our continuing association with the Naval Nuclear Propulsion Program in support of national security.

Sincerely,

Ivan Selin

cc: Secretary of Defense
Secretary of Energy
Secretary of the Navy



UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, D. C. 20555

June 14, 1994

Admiral B. DeMars
Director, Naval Nuclear Propulsion
Department of the Navy
Naval Sea Systems Command (08)
Washington, D.C. 20362-5101

Dear Admiral DeMars:

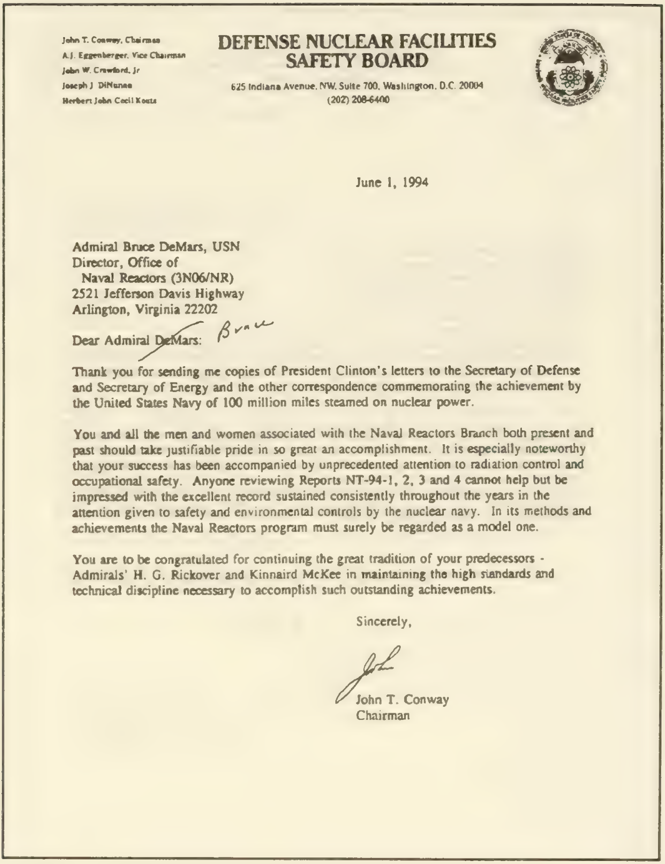
The Advisory Committee on Reactor Safeguards offers its congratulations for the recent milestone achievement of safely steaming 100 million miles on nuclear power. This is truly an impressive and historic event.

The outstanding record of sound Naval reactor operations is based on the Naval Nuclear Propulsion Program's conservative design philosophy, stringent standards for materials and construction, technical discipline, and a sound operating philosophy. This philosophy is based on the tenet that the safe conduct of operations is strongly dependent on high-quality personnel. We commend the emphasis your Program has placed on high standards for the selection, training, and qualification of personnel who operate Naval nuclear propulsion plants.

Sincerely,

T. S. Kress

T. S. Kress
Chairman



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**DEFENSE NUCLEAR FACILITIES
SAFETY BOARD**

625 Indiana Avenue, NW, Suite 700, Washington, D.C. 20004
(202) 208-6400

June 1, 1994

Admiral Bruce DeMars, USN
Director, Office of
Naval Reactors (3N06/NR)
2521 Jefferson Davis Highway
Arlington, Virginia 22202

Dear Admiral ~~DeMars~~: Bruce

Thank you for sending me copies of President Clinton's letters to the Secretary of Defense and Secretary of Energy and the other correspondence commemorating the achievement by the United States Navy of 100 million miles steamed on nuclear power.

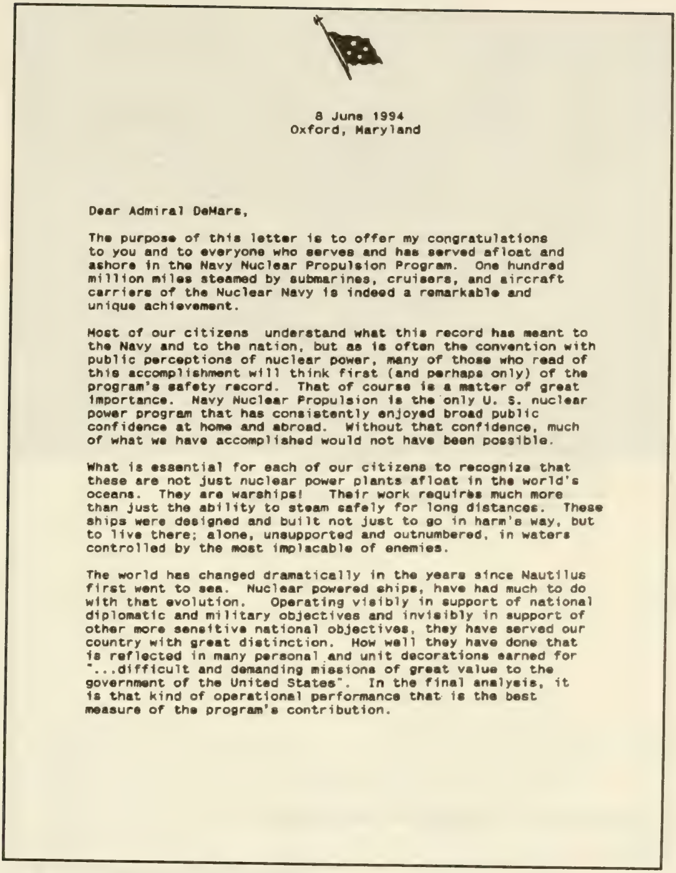
You and all the men and women associated with the Naval Reactors Branch both present and past should take justifiable pride in so great an accomplishment. It is especially noteworthy that your success has been accompanied by unprecedented attention to radiation control and occupational safety. Anyone reviewing Reports NT-94-1, 2, 3 and 4 cannot help but be impressed with the excellent record sustained consistently throughout the years in the attention given to safety and environmental controls by the nuclear navy. In its methods and achievements the Naval Reactors program must surely be regarded as a model one.

You are to be congratulated for continuing the great tradition of your predecessors - Admirals' H. G. Rickover and Kinnaird McKee in maintaining the high standards and technical discipline necessary to accomplish such outstanding achievements.

Sincerely,

John

John T. Conway
Chairman



8 June 1994
Oxford, Maryland

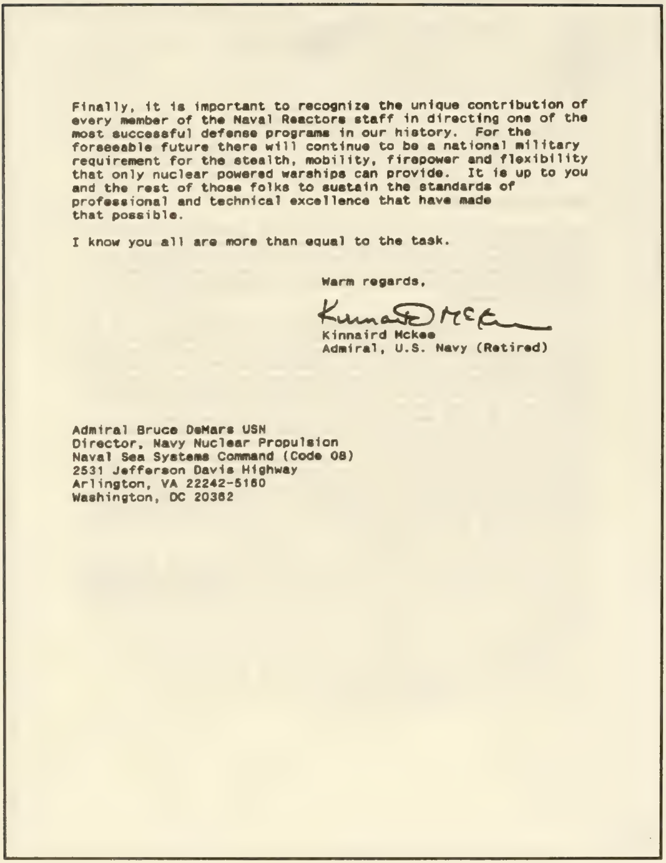
Dear Admiral DeMars,

The purpose of this letter is to offer my congratulations to you and to everyone who serves and has served afloat and ashore in the Navy Nuclear Propulsion Program. One hundred million miles steamed by submarines, cruisers, and aircraft carriers of the Nuclear Navy is indeed a remarkable and unique achievement.

Most of our citizens understand what this record has meant to the Navy and to the nation, but as is often the convention with public perceptions of nuclear power, many of those who read of this accomplishment will think first (and perhaps only) of the program's safety record. That of course is a matter of great importance. Navy Nuclear Propulsion is the only U. S. nuclear power program that has consistently enjoyed broad public confidence at home and abroad. Without that confidence, much of what we have accomplished would not have been possible.

What is essential for each of our citizens to recognize that these are not just nuclear power plants afloat in the world's oceans. They are warships! Their work requires much more than just the ability to steam safely for long distances. These ships were designed and built not just to go in harm's way, but to live there; alone, unsupported and outnumbered, in waters controlled by the most implacable of enemies.

The world has changed dramatically in the years since Nautilus first went to sea. Nuclear powered ships, have had much to do with that evolution. Operating visibly in support of national diplomatic and military objectives and invisibly in support of other more sensitive national objectives, they have served our country with great distinction. How well they have done that is reflected in many personal and unit decorations earned for "...difficult and demanding missions of great value to the government of the United States". In the final analysis, it is that kind of operational performance that is the best measure of the program's contribution.



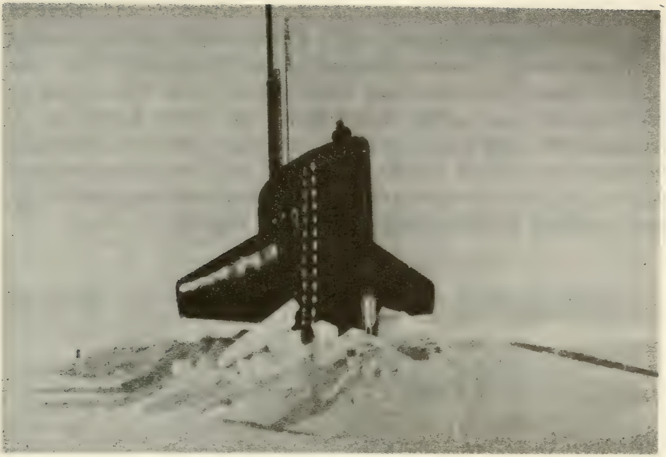
Finally, it is important to recognize the unique contribution of every member of the Naval Reactors staff in directing one of the most successful defense programs in our history. For the forseeable future there will continue to be a national military requirement for the stealth, mobility, firepower and flexibility that only nuclear powered warships can provide. It is up to you and the rest of those folks to sustain the standards of professional and technical excellence that have made that possible.

I know you all are more than equal to the task.

Warm regards,

Kinnaird Mckee
Admiral, U.S. Navy (Retired)

Admiral Bruce DeMars USN
Director, Navy Nuclear Propulsion
Naval Sea Systems Command (Code 08)
2531 Jefferson Davis Highway
Arlington, VA 22242-5160
Washington, DC 20362



USS WHALE (SSN 638)

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PRINTED ON RECYCLED PAPER

"Responsibility is a unique concept: it can only reside and inhere in a single individual. You may share it with others, but your portion is not diminished. You may delegate it, but it is still with you. You may disclaim it, but you cannot divest yourself of it. Even if you do not recognize it or admit its presence, you cannot escape it. If responsibility is rightfully yours, no evasion, or ignorance or passing the blame can shift the burden to someone else. Unless you can point your finger at the man who is responsible when something goes wrong, then you have never had anyone really responsible."

- ADMIRAL HYMAN G. RICKOVER

REPORT NT-95-2
MARCH 1995

OCCUPATIONAL RADIATION EXPOSURE FROM U.S. NAVAL NUCLEAR PLANTS AND THEIR SUPPORT FACILITIES

NAVAL NUCLEAR PROPULSION PROGRAM
DEPARTMENT OF THE NAVY
WASHINGTON, D.C. 20362

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March 1995

OCCUPATIONAL RADIATION EXPOSURE FROM U. S. NAVAL NUCLEAR PROPULSION PLANTS AND THEIR SUPPORT FACILITIES

1994

Prepared by

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and C. W. Burrows
Naval Nuclear Propulsion
Department of the Navy

Approved by

B. DeMARS
Admiral, U. S. Navy
Director
Naval Nuclear Propulsion

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SUMMARY

Radiation exposures to Navy and civilian personnel monitored for radiation associated with U. S. Naval nuclear propulsion plants are summarized in this report. Navy personnel manned twelve tenders, four submarine bases, two moored training ships, 99 nuclear-powered submarines and thirteen nuclear-powered surface ships which were in operation at the end of 1994. Eight shipyards were engaged in construction, overhaul or refueling of these ships. The benefits of nuclear propulsion in our most capable combatant ships have long been recognized, and our nuclear-powered ballistic missile submarines form the most invulnerable element of the U. S. strategic deterrent.

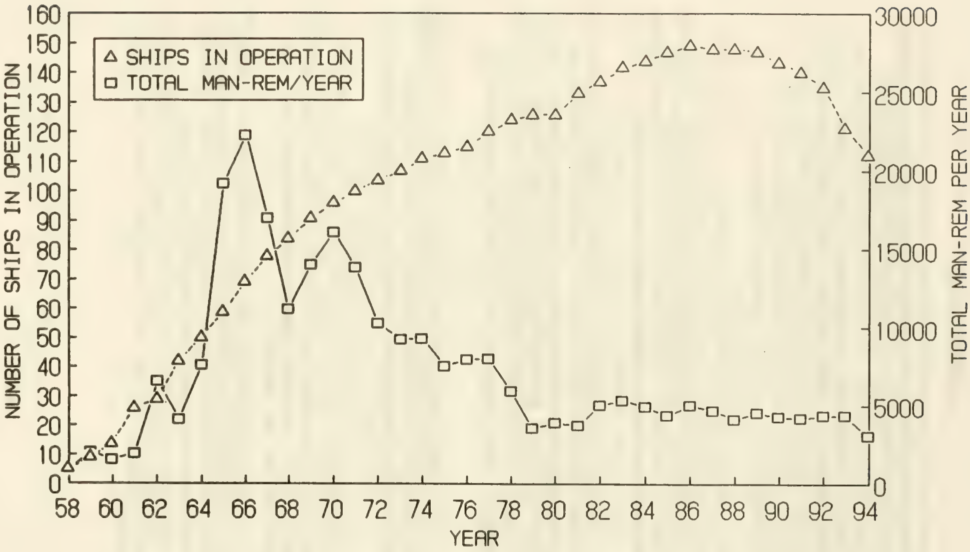
Figure 1 shows that the total radiation exposure in 1994 is less than one-seventh of the amount in the peak year of 1966, even though today there are about one and one-half times the number of nuclear-powered ships in operation and almost three times the number of ships in overhaul. Total man-rem in this figure is the sum of the annual exposures of each person monitored for radiation.

No civilian or military personnel in the Naval Nuclear Propulsion Program have ever exceeded the Federal accumulated limit which allows five rem exposure for each year of age beyond age eighteen. Since 1967, no person has exceeded the Federal limit which allows up to three rem per quarter year, nor in this period has anyone exceeded the Navy's self-imposed limit of 5 rem per year for radiation associated with Naval nuclear propulsion plants.

No civilian or military personnel in the Naval Nuclear Propulsion Program have ever received more than one-tenth the Federal annual occupational exposure limit from internal radiation exposure caused by radioactivity associated with Naval nuclear propulsion plants.

The average occupational exposure of each person monitored is less than one-fifth of a rem per year. The total lifetime exposure from radiation associated with Naval nuclear propulsion plants to date for all personnel monitored since 1954 has averaged about one rem per person.

According to the standard methods for estimating risk, the risk to the group of personnel occupationally exposed to radiation associated with Naval nuclear propulsion plants is less than the risk these same personnel have from exposure to natural background radiation or to medical radiation. This risk is small compared to the risks accepted in normal industrial activities, and it is small compared to the risks regularly accepted in daily life outside work.



TOTAL RADIATION EXPOSURE RECEIVED BY
MILITARY AND CIVILIAN PERSONNEL IN THE NAVAL
NUCLEAR PROPULSION PROGRAM 1958-1994
FIGURE 1

EXTERNAL RADIATION EXPOSURE

Policy and Limits

The policy of the U. S. Naval Nuclear Propulsion Program is to reduce as low as reasonably achievable, exposure to personnel from ionizing radiation associated with Naval nuclear propulsion plants.

The radiation exposure limits used in the U. S. for whole body radiation exposure are 3 rem[1] per quarter year and 5 rem accumulated dose for each year beyond age eighteen. These limits were recommended in 1958 by the U. S. National Committee ("Committee" was changed to "Council" when the organization was chartered by the U. S. Congress in 1964) on Radiation Protection and Measurements (ref 1) and by the International Commission on Radiological Protection (ref 2). They were adopted by the U. S. Atomic Energy Commission (AEC) and applied both within the AEC and to licensees in 1960 (ref 3). The U. S. Federal Radiation Council recommendation that these be used as guidance for Federal agencies was approved by President Eisenhower on May 13, 1960 (ref 4). The U. S. Department of Labor adopted these same limits. A key part of each of these standards has been emphasis on minimizing radiation exposure to personnel.

In 1965, the International Commission on Radiological Protection (ref 5) reiterated the quarterly and accumulated limits cited above but suggested that exceeding 5 rem in one year should be infrequent. Although none of the other organizations referred to above changed its recommendations accordingly, the Naval Nuclear Propulsion Program adopted 5 rem per year as a rigorous limit effective in 1967.

In 1971, the National Council on Radiation Protection and Measurements (ref 6) recommended that 5 rem be adopted as the annual limit under most conditions. In 1974, the AEC (now Department of Energy) (ref 7) established 5 rem as its annual limit. In 1977, the International Commission on Radiological Protection (ref 8) deleted the accumulated limit and recommended 5 rem as the annual limit. In 1979, the Nuclear Regulatory Commission issued a proposed change to the Code of Federal Regulations Title 10, Part 20 to require its licensees to use 5 rem as an annual limit. On January 20, 1987, revised guidance for Federal agencies was approved by President Reagan which eliminated the accumulated dose limit discussed above and established a 5 rem per year limit for occupational exposure to radiation (ref 9). Recently, the Nuclear Regulatory Commission approved the change to the Code of Federal Regulations, Title 10, Part 20 that makes the 5 rem annual limit effective on or before January 1, 1994.

References are listed on pages 58 through 61.

[1] 1 rem = 0.01 Sievert

The Naval Nuclear Propulsion Program radiation exposure limits since 1967 have been:

3 rem per quarter year
5 rem per year

Special limits are in effect such as for hands and feet; however, there have been few cases where these limits have been more restrictive than the whole body radiation exposure limits. Therefore, the radiation exposures discussed in this report are nearly all from whole body radiation. Controls are also in effect to minimize any occupational radiation exposure to the unborn child of a pregnant worker.

Each organization in the Naval Nuclear Propulsion Program is required to have an active program to reduce radiation exposure to the minimum practicable.

Source of Radiation

The radiation discussed in this report originates from pressurized water reactors. Water circulates through a closed piping system to transfer heat from the reactor core to a secondary steam system isolated from the reactor cooling water. Trace amounts of corrosion and wear products are carried by reactor coolant from reactor plant metal surfaces. Some of these corrosion and wear products are deposited on the reactor core and become radioactive from exposure to neutrons. Reactor coolant carries some of these radioactive products through the piping systems where a portion of the radioactivity is removed by a purification system. Most of the remaining radionuclides transported from the reactor core deposit in the piping systems.

The reactor core is installed in a heavy-walled pressure vessel within a primary shield. This shield limits radiation exposure from the gammas and neutrons produced when the reactor is at power. Reactor plant piping systems are installed primarily inside a reactor compartment which is surrounded by a secondary shield. Access to the reactor compartment is permitted only after the reactor is shut down. Most radiation exposure to personnel comes from inspection, maintenance, and repair inside the reactor compartment. The major source of this radiation is cobalt-60 deposited inside the piping systems. Cobalt-60 emits two high energy gammas and a low energy beta for every radioactive decay. Its half-life is 5.3 years.

Neutrons produced when reactor fuel fissions are shielded by both primary and secondary shields before penetrating to occupied areas. Radiation exposure to personnel from these neutrons during reactor operation has been much less than from gammas. After reactor shutdown, when shipyard and other support facility work is done, no neutron exposure is detectable. As a result, the radiation exposures discussed in this report are nearly all from gamma radiation.

Control of Radiation During Reactor Plant Operation

Reactor plant shielding is designed to minimize radiation exposure to personnel. Shield design criteria establishing radiation levels in various parts of each nuclear-powered ship are personally approved by the Director of the Naval Nuclear Propulsion Program.

Ship design is also controlled to keep locations, such as duty stations where personnel need to spend time, as far as practicable away from the reactor compartment shield. Special attention is paid to living quarters. For example, the shield design criteria were established such that a person would have to spend more than 48 hours per day in living quarters to exceed exposure limits (which is impossible since there are only 24 hours in a day).

Resulting radiation outside propulsion plant spaces during reactor plant operation is generally not any greater than natural background radiation. For submarine operating personnel outside the propulsion plant, the combination of low natural radioactivity in ship construction materials and reduced cosmic radiation under water results in less radiation exposure from the nuclear reactor at sea than the public receives from natural background sources ashore. Those who operate the nuclear propulsion plant receive more radiation exposure in port during maintenance and overhaul periods than they receive from operating the propulsion plant at sea.

Control of Radiation in Support Facilities

Tenders for nuclear-powered submarines and surface ships are designed so that radioactive material is handled only in specially designed and shielded nuclear support facilities. Submarine bases and shipyards limit to the minimum, the number of places where radioactive material is allowed. Specific traffic routes are required to be used for any movement of radioactive material outside these nuclear support facilities. A radioactive material accountability system is used to ensure no radioactive material is lost or misplaced in a location where personnel could unknowingly be exposed. Regular inventories are required for every item in the radioactive material accountability system. Radioactive material is tagged with yellow and magenta tags bearing the standard radiation symbol and the measured radiation level. Radioactive material removed from a reactor plant is required to be placed in yellow plastic, and the use of yellow plastic is reserved solely for radioactive material. All personnel assigned to a tender, submarine base or shipyard are trained to recognize that yellow plastic identifies radioactive material and to initiate immediate action if radioactive material is discovered out of place.

Access to radiation areas is controlled by posted signs and barriers. Personnel are trained in the access requirements, including the requirement to wear dosimetry devices to enter these areas. Dosimetry devices are also posted near the boundaries of these areas to verify that personnel outside these areas do not require monitoring. Frequent radiation surveys are required using instruments which are checked before use and calibrated regularly. Areas where radiation levels are greater than 0.1 rem per hour are called high radiation areas and are locked or guarded. Compliance with radiological controls requirements is checked frequently by radiological controls personnel and other personnel not affiliated with the radiological controls organization.

Dosimetry

Thermoluminescent dosimeters (TLDs) have been the dosimetry devices worn by personnel to measure their exposure to gamma radiation, since 1974. Prior to 1974, film badges were used as described in detail below. The TLD contains two chips of calcium fluoride with added manganese. It is characteristic of thermoluminescent material that radiation causes internal changes which make the material, when subsequently heated, give off an amount of light directly proportional to the radiation dose. In order to make it convenient to handle, these chips of calcium fluoride are in contact with a metallic heating strip with heater wires extending through the ends of a surrounding glass envelope. The glass bulb is protected by a plastic case designed to permit the proper response to gammas of various energies. Gammas of such low energy that they will not penetrate the plastic case constitute less than a few percent of the total gamma radiation present. To read the radiation exposure, a trained operator removes the glass bulb and places it in a TLD reader so that the metal heater wires contact an electrical circuit. An electronically controlled device heats the calcium fluoride chips to several hundred degrees centigrade in a timed cycle, and the intensity of light emitted is measured and converted to a digital readout in units of rem. The heating cycle also anneals the calcium fluoride chips so that the dosimeter is zeroed and ready for subsequent use. The entire cycle of reading a TLD described here takes about thirty seconds. This rapid readout capability was one reason for changing from film badges to TLDs. The use of TLDs permits more frequent measurement of a worker's radiation exposure than film badges. TLDs are required to be processed at least daily in Naval shipyards. Aboard ship, TLDs are required to be processed at least monthly except that daily processing is required for anyone entering a reactor compartment or high radiation area.

To ensure accuracy of the TLD system, several periodic calibration and accuracy checks are performed. For example, TLDs are checked when new and once every six months thereafter for accurate response to a known radiation exposure. Those that fail are discarded. TLD readers are calibrated once each year to verify accuracy by one of several calibration facilities having precision radiation sources and precision TLD standards. In addition, weekly, daily and hourly checks of proper TLD reader operation and accuracy are performed when readers are in use utilizing internal electronic standards built into each reader.

In addition to these calibrations and checks, the Navy has an independent dosimetry quality assurance program to monitor the accuracy of TLDs and TLD readers in use at program activities. Precision TLDs are pre-exposed to exact amounts of radiation by the National Institute of Standards and Technology, formerly the National Bureau of Standards, and provided to program activities for reading. The activity's results are then compared to the actual exposures. A random sample of dosimeters in use at the activity being tested is also selected and sent to a Navy shore facility for accuracy testing. To assure objectivity, the activity being tested is not told of the radiation values to which the dosimeters have been exposed and is not permitted to participate in the selection of the dosimeter sample. Any inaccuracies found by these tests that exceed established permissible error bands result in appropriate corrective action such as recalibration of a failed TLD reader. The results of this program demonstrate that the radiation to which personnel are exposed is being measured by the TLD system with an average error of less than 10%.

The Naval Nuclear Propulsion Program dosimetry system is accredited under the National Voluntary Laboratory Accreditation Program. This voluntary program, sponsored by the National Institute of Standards and Technology, provides independent review of dosimetry services for consistency with accepted standards.

Pocket ionization chambers with an eyepiece permit the wearer to read his own radiation exposure. This pocket dosimeter is required in addition to a TLD when entering a reactor compartment or a high radiation area. Pocket dosimeters are used to enable the wearer to keep track of his own radiation exposure during a work period. The official record of radiation exposure is obtained from the TLD.

Dosimetry devices are worn on the trunk of the body, normally at the waist or chest. In some special situations dosimeters are worn at other locations, for example on the hands or fingers or head.

Discrepancies between TLD and pocket dosimeter measurements are investigated. These investigations include making independent estimates of the worker's exposure using such methods as time spent in the specific radiation area and comparing the estimates with the TLD and pocket dosimeter measurements to determine which measurement is most accurate.

In 1974, the conversion from film badges to TLDs for measuring radiation exposure was completed. Prior to this time, film packets like those used for dental x-rays were placed in holders designed to allow differentiating between types of radiation. The darkness of the processed film was measured with a densitometer and converted to units of radiation exposure. When the first personnel radiation exposures were measured in the Naval Nuclear Propulsion Program, there already was widespread photodosimetry experience in the Navy and precise procedures existed to provide reproducible results.

Each film badge was clearly marked with a name or number corresponding to the individual to whom it was assigned. This number was periodically checked by a radiological controls technician before a worker entered a high radiation area. In high radiation areas every worker also wore a pocket dosimeter which was read by radiological controls personnel when the worker left the area. At the end of each month when the film badges were processed, the film badge measurements were compared with the sum of the pocket dosimeter readings. The film badge results were, with few exceptions, entered in the permanent personnel radiation exposure records.

Results of numerous tests conducted by shipyards under the same conditions that most radiation exposure was received showed that film measurements averaged fifteen percent higher than actual radiation exposures. This was a conscious conservatism to ensure that under the worst case, the film measurement was not less than the actual radiation exposure. Film response varies with the energy of the gamma radiation. The calibration of the film was performed at high energy where the film has the least response to radiation exposure. Radiation of lower energies corresponding to scattered radiation from shielded cobalt-60 causes the film to indicate more radiation exposure than is present.

Data gathered in over 20 years of neutron monitoring aboard ships using neutron film badges demonstrated that the monitored individuals did not receive neutron exposure above the minimum detection level for neutron film. Naval nuclear-powered ships and their support facilities now use lithium fluoride TLDs to monitor neutron exposure of the few personnel exposed to neutron sources such as for radiation instrument calibration and for reactor plant instrumentation source handling. These measured neutron exposures have been added to gamma exposures in the total whole body radiation exposure in this report, but because neutron exposures are so low, the radiation exposures in this report are almost entirely from gamma radiation.

Monitoring for beta radiation is not normally required because betas cannot penetrate the metal boundaries of the reactor coolant system. Beta radiation needs to be considered in maintenance or repair operations only when systems are opened so that personnel are close to surfaces which have been contaminated with radioactive corrosion products from reactor coolant. In these cases anticontamination clothing, faceshields, or plastic contamination control materials completely shield beta radiation of the energies normally present. Support facilities routinely provide such materials to eliminate personnel radiation exposure from betas.

Monitoring for alpha radiation is not a normal part of operation or maintenance of Naval nuclear propulsion plants. However, alpha monitoring is sometimes necessary to identify radon daughter products naturally present in the atmosphere.

Physical Examinations

Radiation medical examinations have been required since the beginning of the Naval Nuclear Propulsion Program for personnel exposed to radiation. These examinations are conducted in accordance with the Navy's Radiation Health Protection Manual (ref 10). In these examinations the doctor pays special attention to any condition which might medically disqualify a person from receiving occupational radiation exposure or pose a health or safety hazard to the individual, co-workers, or to the safety of the workplace. Passing this examination is a prerequisite for obtaining dosimetry which permits entry to areas where radiation exposure can be received. For military personnel who have already been screened by physical examinations, few fail this radiation medical examination. For civilian shipyard workers, the failure rate is a few percent. However, failure of this examination does not mean a shipyard worker will not have a job. Since shipyard workers spend most of their time on non-radioactive work, inability to qualify for radioactive work does not restrict their job opportunities. No shipyard worker in the Naval Nuclear Propulsion Program has been fired for inability to pass a radiation medical examination.

Radiation medical examinations are given prior to initial radiation work, periodically thereafter depending on the worker's age, and at termination of radioactive work in the Naval Nuclear Propulsion Program (or at termination of employment). The periodic examinations are conducted in accordance with the following frequencies:

Age	Interval
18-24	Pre-placement
25-49	5 years
50-59	2 years
≥60	1 year

A radiation medical examination includes review of medical history to determine, among other subjects, past radiation exposure, history of cancer, history of radiation therapy, and family history of cancer. In the medical examination, particular attention is paid to evidence of cancer or precancerous condition. Laboratory procedures include urinalysis, blood analysis, and comparison of blood constituents to a specific set of standards. In the event disqualifying conditions are found in an examination of Naval civilian or military personnel, the individual is barred from receiving occupational radiation exposure and the results of the examination are reviewed by the Bureau of Medicine and Surgery's Radiation Effects Advisory Board. Only after approval of the Board would the individual be permitted to receive occupational radiation exposure.

Shipyard, Tender, and Submarine Base Training

Periodic radiological controls training is performed to ensure each person understands the general and specific radiological aspects which he might encounter, understands his responsibility to the Navy and the public for safe handling of radioactive materials, understands the risks associated with radiation exposure, and understands his responsibility to minimize his own radiation exposure. Training is also provided on the biological risk of radiation exposure to the unborn child. Prior to being authorized to perform radioactive work, an employee is required to satisfactorily complete a radiological controls training course, including a written examination. Typical course lengths for workers range from 16 to 32 hours. In written examinations on radiological controls, short answer questions, such as multiple choice and true-false questions, are prohibited. The following are the minimum training requirements for workers:

1. Radiation Exposure Control:

    a. State the limits for whole body penetrating radiation. Explain that the rem is a unit of biological dose from radiation.

    b. Discuss the importance of the individual keeping track of his/her own exposure. Know how to obtain year-to-date exposure information.

    c. Know that local administrative control levels are established to maintain personnel radiation exposure as low as reasonably achievable. Know your own exposure control level and who can approve changes to this level.

    d. Discuss procedures and methods for minimizing exposure such as working at a distance from a source, reducing time in radiation areas, and using shielding.

    e. Know that a worker is not authorized to move, modify, or add temporary shielding without specific authorization.

    f. Discuss potential sources of radiation associated with work performed by the individual's trade.

    g. Discuss the action to be taken if an individual loses dosimetry equipment while in a posted radiation or high radiation area.

    h. Discuss how to obtain and turn in dosimetry equipment.

i. Know that thermoluminescent dosimetry equipment is required to be worn on the portion of the individual's body that receives the highest exposure and that pocket dosimeters are worn at the same location on the body as the thermoluminescent dosimetry. Know that only radiological controls personnel can authorize movement of dosimetry equipment from areas of the body where dosimetry is normally worn (such as the chest or waist) to other areas of the body.

j. Be aware of the seriousness of violating instructions on radiation warning signs and unauthorized passage through barriers.

k. Explain how "stay times" are used.

l. Know that Naval nuclear work at a facility has no significant effect on the environment or on personnel living adjacent to or within the facility.

m. Explain the risk associated with personnel radiation exposure. Know that any amount of radiation exposure, no matter how small, might involve some risk; however, exposure within accepted limits represents a risk that is small compared with normal hazards of life. The National Council on Radiation Protection and Measurements has stated that while exposures of workers and the general population should be kept to the lowest practicable levels at all times, the presently permitted exposures limit the risk to a reasonable level in comparison to nonradiation risks. Know that cancer is the main potential health effect of receiving radiation exposure. Know that any amount of radiation exposure to the unborn child, no matter how small the exposure, might involve some risk; however, exposure of the unborn child within accepted limits represents a risk that is small when compared with other risks to the unborn child. Know that the risk to future generations (genetic effect) is considered to be even smaller than the cancer risk and that genetic effects have not been observed in humans.

n. Know how often an individual shall read his/her pocket dosimeter while in a posted high radiation area. Know that worker shall leave a posted high radiation area when his/her pocket dosimeter reaches three quarters scale or when a preassigned exposure is reached, whichever is lowest.

o. Know that stay times and predetermined pocket dosimeter readings are assigned when working in radiation fields of 1 rem/hour or greater. Know that the worker shall leave the work area when either the assigned stay time or pocket dosimeter reading is reached.

2. Contamination Control:

   a. Discuss how contamination is controlled during radioactive work (e.g., containment in plastic bags and use of contamination containment areas). Explain that these controls limit exposure to internal radioactivity to insignificant levels.

   b. Discuss how contamination is detected on personnel.

   c. Discuss how contamination is removed from objects and personnel.

   d. Discuss potential sources of contamination associated with work performed by the individual's trade.

   e. State the beta-gamma surface contamination limit. Discuss the meaning of the units of the limit.

   f. Explain what radioactive contamination is. Explain the difference between radiation and radioactive contamination.

   g. For personnel who are trained to wear respiratory protection equipment, state the controls for use of such equipment. State the limits for airborne particulate radioactivity.

   h. Discuss the required checks to determine whether personnel contamination monitoring equipment is operational prior to conducting personnel monitoring. Discuss the action to be taken if the checks indicate the equipment is not operating properly.

   i. Discuss the actions to be taken if personnel contamination monitoring equipment alarms while conducting personnel monitoring.

   j. Discuss the procedure to package and remove a contaminated item from a controlled surface contamination area.

   k. Know that no health effects are expected from receiving radioactive contamination associated with Naval nuclear propulsion plants on the skin.

3. Accountability of Radioactive Materials: Know that radioactive materials are accounted for when transferred between radiologically controlled areas by tagging, by tracking location, and through the use of radioactive material escorts.

4. Waste Disposal:

    a. Discuss how individual workers can reduce the amount of radioactive liquid and solid waste generated for the specific type of duties performed.

    b. Discuss the importance of proper segregation of non-contaminated, potentially contaminated, and contaminated material.

    c. Know what reactor plant reuse water is. Discuss the appropriate uses of reactor plant reuse water.

5. Radiological Casualties:

    a. Discuss the need for consulting radiological controls personnel when questions or problems occur. Understand the importance of complying with the instructions of radiological controls personnel in the event of a problem involving radioactivity.

    b. Discuss procedures to be followed in the event of a spill of material (liquid or solid) which is or might be radioactive.

    c. Discuss procedures to be followed when notified that airborne radioactivity is above the limit.

    d. Discuss procedures to be followed in the event a high radiation area is improperly controlled.

    e. Discuss actions to be taken when an individual discovers his/her pocket dosimeter is off-scale or has recorded a higher reading than expected.

6. Responsibilities of Individuals: Discuss actions required in order to fulfill workers' responsibilities. Discuss the responsibility of the individual to notify his/her employer of medical radiation therapy, medical diagnosis involving radioisotopes, open wounds or lesions, physical conditions which they feel affects their qualification to receive occupational radiation exposure, or occupational radiation exposure from past or current outside employment. Discuss the responsibility of the individual to report to area supervision or radiological controls personnel any

condition that might lead to or cause avoidable exposure to radiation.

7. Practical Ability Demonstrations: These demonstrations are performed on a mock-up.

   a. Demonstrate the ability to read all types of pocket dosimeters used by the organization.

   b. Demonstrate the proper procedure for donning and removing a full set of anticontamination clothing.

   c. Demonstrate the proper procedures for entering and leaving a high radiation area, a radiologically controlled area, and a control point area, including proper procedures for self-monitoring. Demonstrate the ability to read and interpret posted radiation and contamination survey maps.

   d. Demonstrate the ability to properly package and remove an item from a controlled surface contamination area.

   e. Demonstrate action to be taken by one or two workers in the event of a spill of radioactive liquid.

   f. For personnel who will enter or remain in areas where respiratory protection equipment is required, demonstrate the proper procedure for donning and removing the type of respiratory equipment the individual will be required to wear in conjunction with anticontamination clothing. In addition, individuals who are trained to wear air-fed hoods demonstrate the proper response to take if supply air is lost while wearing an air-fed hood.

   g. For personnel who are trained to work in contamination containment areas, demonstrate the proper procedures for working in these areas. This demonstration includes a pre-work inspection, transfer of an item into the area, a work evolution in the area, and transfer of an item out of the area.

In addition to passing a written examination, completion of this training course requires satisfactory performance during basic types of simulated work operations. For an employee to continue as a radiation worker, he has to requalify in a manner similar to the initial qualification at least every two years. In between these qualification periods, personnel are required to be selected at random for additional written and practical work operation examinations to determine how well the knowledge and abilities have been retained. Training is also conducted by individual shop instructors in the specific job skills for radiation work within each trade. For complex jobs this is followed by special training for the specific job, frequently using mock-ups outside radiation areas.

Radiological controls technicians are required to complete a course of six months to one year in length in radiological controls, to demonstrate their practical abilities in work operations and drills, and to pass comprehensive written and oral examinations. Radiological controls supervisors are required to have at least the same technical knowledge and abilities as the technicians; however, passing scores for supervisors' examinations are higher or supervisors' examinations are more difficult than for technicians. Oral examinations are conducted by radiological controls managers and senior supervisors and require personnel to be able to evaluate symptoms of unusual radiological controls situations. The radiological controls technician or supervisor is required to evaluate initial symptoms, state immediate corrective action required, state what additional measurements are required, and do a final analysis of the measurements to identify the specific problem. Subsequent to qualification, periodic training sessions are required in which each radiological controls technician and supervisor demonstrates ability to handle situations such as are used in the oral examinations. At least every two and a half years, radiological controls personnel have to requalify through written and practical abilities examinations similar to those used for initial qualification. Additionally, their first requalification includes an oral examination similar to the one required for initial qualification. Between qualification periods, radiological controls technicians and supervisors are required to be selected at random for additional written and practical abilities examinations. They also must participate in unannounced drills.

In addition to the above training for those who are involved in radioactive work, each shipyard employee not involved in radioactive work and each person assigned to a nuclear-powered ship or a support facility is required to receive basic radiological training which is repeated at least annually. This training is to ensure personnel understand the posting of radiological areas, the identification of radioactive materials, and not to cross radiological barriers. This instruction also explains that the radiation environment of personnel outside radiation areas and outside the ship or shipyard is not significantly affected by nuclear propulsion plant work.

Nuclear Power Training

Military personnel who operate Naval nuclear propulsion plants are required to pass a six month basic training course at Nuclear Power School and a six month qualification course at a land-based prototype of a shipboard reactor plant or moored training ship. Each nuclear-trained officer and enlisted person receives extensive radiological controls training including lectures, demonstrations, practical work, radiological controls drills, and written and oral examinations. This training has emphasized the ability to apply basic information on radiation and radioactivity.

Those enlisted personnel who will have additional responsibilities for radiological controls associated with operation of nuclear propulsion plants are designated Engineering Laboratory Technicians and receive an additional three months training after completion of the one year program. Engineering Laboratory Technicians and other selected nuclear trained personnel who are assigned radiological controls duties at tenders and submarine bases normally receive an additional intensive one month training program in the practical aspects of radiological controls associated with maintenance and repair work.

Prior to becoming qualified as the Engineer Officer, that is, the head of the engineering department of a nuclear-powered ship, a nuclear-trained officer must pass a one day written examination and a sequence of oral examinations conducted at the Naval Nuclear Propulsion Program headquarters. A key part of these qualification examinations is radiological controls.

Immediately before serving as Commanding Officer of a nuclear-powered ship, an officer attends a three month course at the Naval Nuclear Propulsion Program headquarters. The radiological controls portion of this course covers advanced topics and assumes the officer starts with detailed familiarity with shipboard radiological controls. The officer must pass both written and oral examinations in radiological controls during this course prior to assuming command of a nuclear-powered ship.

Radiation Exposure Reduction

Maintaining personnel radiation exposures as low as reasonably achievable involves all levels of management in nuclear-powered ships and their support facilities. Operations, maintenance, and repair personnel are required to be involved in this subject; it is not left solely to radiological controls personnel. To evaluate the effectiveness of radiation exposure reduction programs, managers use a set of goals. Goals are also set in advance to keep each worker's exposure under certain levels and to minimize the number of workers involved. Goals are also set on the total cumulative personnel radiation exposure (man-rem) for each major job, for the entire overhaul or maintenance period, and for the whole year. These goals are deliberately made hard to meet in order to encourage personnel to improve performance.

Of the various goals used, the most effective in reducing personnel radiation exposure has been the use of individual exposure control levels which are lower than the Navy's quarterly and annual limits. Control levels in shipyards range from 0.5

rem to 2 rem for the year, depending on the amount of radioactive work scheduled, whereas 5 rem per year is the annual Navy limit.

To achieve the benefits of lower control levels in reducing total man-rem, it is essential to minimize the number of workers permitted to receive radiation exposure. Otherwise the control levels could be met merely by adding more workers. Organizations are required to conduct periodic reviews to ensure the number of workers is the minimum for the work that has to be performed.

The following is a synopsis of the checklist which has been in use for years in maintaining personnel radiation exposure as low as reasonably achievable during maintenance, overhaul, and repair.

Preliminary Planning

- Plan in advance
- Delete unnecessary work
- Determine expected radiation levels

Preparation of Work Procedures

- Plan access to and exit from work area
- Provide for service lines (air, welding, ventilation, etc.)
- Provide communication (sometimes includes closed-circuit television)
- Remove sources of radiation
- Plan for installation of temporary shielding
- Decontaminate
- Work in lowest radiation levels
- Perform as much work as practicable outside radiation areas
- State requirements for standard tools
- Consider special tools
- Include inspection requirements (these identify steps where radiological controls personnel must sign prior to work proceeding)
- Minimize discomfort of workers
- Estimate man-rem

Temporary Shielding

- Control installation and removal by written procedure
- Inspect after installation
- Conduct periodic radiation surveys
- Minimize damage caused by heavy lead temporary shielding
- Balance radiation exposure received in installation against exposure to be saved by installation
- Shield travel routes

- Shield components with abnormally high radiation levels early in the maintenance period
- Shield position worker occupies
- Perform directional surveys to improve design of shielding by locating sources of radiation
- Use mock-up to plan temporary shielding design and installation

Rehearsing and Briefing

- Rehearse
- Use mock-up duplicating working conditions
- Use photographs
- Brief workers

Performing Work

- Post radiation levels
- Keep excess personnel out of radiation areas
- Minimize beta radiation exposure (anticontamination clothing effectively shields cobalt-60 betas)
- Supervisors and workers keep track of radiation exposure
- Workers assist in radiation and radioactivity measurements
- Workers assist in radiation and radioactivity measurements
- Evaluate use of fewer workers
- Reevaluate reducing radiation exposures

Since its inception, the Naval Nuclear Propulsion Program has stressed the reduction of personnel radiation exposure. Beginning in the 1960's, a key part of the Program's effort in this area has involved minimizing radioactive corrosion products throughout the reactor plant, which in turn has significantly contributed to reducing personnel radiation exposure. Additional measures that have been taken to reduce exposure include standardization and optimization of procedures, development of new tooling, improved use of temporary shielding, and compliance with strict contamination control measures. For example, most work involving radioactive contamination is performed in total containment. This practice minimizes the potential for spreading contamination and thus reduces work disruptions, simplifies working conditions, and minimizes the cost and exposure to clean up.

Lessons learned during radioactive work and new ways to reduce exposure developed at one organization are made available for use by other organizations in the Naval Nuclear Propulsion Program. This effort allows all of the organizations to take advantage of the experience and developments at one organization and minimizes effort.

The extensive efforts that have been taken to reduce exposure in the Naval Nuclear Propulsion Program have also had other benefits, such as reduced cost to perform radioactive work and improved reliability. Efforts such as detailed work planning, rehearsing, total containment, special tools, and standardization have resulted in increased efficiency and better access to perform maintenance with the overall result that reliability is improved and costs are reduced.

Radiation Exposure Data

Radioactive materials had been handled in shipyards for years before Naval nuclear propulsion plant work started. Examples of such work include non-destructive testing using radiography sources and radiation instrument calibration using radioactive sources. Since this work is licensed by the Nuclear Regulatory Commission or by a state under agreement with the Nuclear Regulatory Commission, the radiation exposure from this licensed work has been excluded whenever practicable from this report.

Table 1 shows the dates when radioactive work associated with Naval nuclear propulsion plants started in each of eleven shipyards. Seven of these shipyards have constructed Naval nuclear-powered ships; however, little radiation exposure is received in new construction. The dates of starting reactor plant overhaul, therefore, are the significant dates for start of radioactive work.

The total occupational radiation exposure received by all personnel in the Naval Nuclear Propulsion Program in 1994 was 3,090 man-rem. Table 2 summarizes radiation exposure received in nuclear-powered ships and their supporting tenders and submarine bases since the first nuclear-powered ship went to sea in January 1955. Most of the radiation exposure in this table results from inspection, maintenance and repair work in the reactor compartments of ships. In general, radiation exposures for reactor compartment work increase as reactor plant radiation levels increase with the age of the plant.

Table 3 summarizes radiation exposures of shipyard personnel since the start of Naval nuclear propulsion plant radioactive work in 1954. Figure 2 shows graphically that total personnel radiation exposure has been reduced in shipyards even though the amount of work has increased. Since ship overhauls frequently overlapped calendar years, the numbers of ships in overhaul shown in Figure 2 were determined by dividing by 12 the total number of months each ship was in overhaul during a calendar year. Overhauls include defueling and inactivation of decommissioned ships.

The increase in the numbers of personnel monitored and total man-rem exposure in the early years shows the increasing workload in reactor plant work as the number of ships increased. By 1962, four submarine reactor plants had been overhauled and major efforts were underway to reduce radiation levels. By 1966, the number of ships in overhaul had quadrupled as indicated by the buildup to the peak in total man-rem. Subsequently, the number of ships in overhaul more than quadrupled again. Decreases in total annual exposures, numbers of personnel monitored, and numbers of personnel with annual exposures over 2 rem have been as a result of the program to reduce radiation exposures to the minimum practicable. Since 1954, the total annual exposure for the shipyards has averaged less than 5,000 man-rem and for ships has averaged less than 1,800 man-rem.

Since a worker usually is exposed to radiation in more than one year, the total number of personnel monitored cannot be obtained by adding the annual numbers. The total number of shipyard personnel monitored for radiation exposure associated with the Naval Nuclear Propulsion Program has been about 165,000. Nearly all of these are civilians, about half of whom are U. S. Government employees at six Naval shipyards. Table 4 provides further information about the distribution of their radiation exposures. In 1994, about 95 percent of those monitored for radiation in shipyards and more than 99 percent of those in ships received less than 0.5 rem in a year. The average exposure per year for each person monitored has been 0.25 rem in shipyards and 0.08 rem in ships, which is less than the 0.30 rem average annual exposure a person receives from natural background radiation (ref 11).

Table 4 also lists the numbers of personnel who have exceeded the 3 rem quarterly exposure limit. In no case have personnel exceeded the Federal accumulated limit of 5 rem for each year of age over eighteen. The total number of persons who have exceeded the quarterly limit since the limit was imposed in 1960 is 37, of whom 4 were military personnel aboard ships. Thirty of the 37 personnel had quarterly exposures in the range of 3 to 4 rem, and the highest exposure was 9.7 rem in a quarter. Navy procedures require any person who receives greater than 25 rem in a short time period to be placed under medical observation. None of the exposures reached this level. Furthermore, since 1967 no person has exceeded the Federal limit which allows up to three rem per quarter year, nor in this period has anyone exceeded the Navy's self-imposed limit of 5 rem per year for radiation associated with Naval nuclear propulsion plants.

The average lifetime accumulated exposure from radiation associated with Naval nuclear plants for all shipyard personnel is 1.2 rem. Since the average annual exposure per person is 0.25 rem, this means that the average shipyard radiation worker is monitored because of Naval nuclear propulsion plant work for about five years. The average lifetime accumulated exposure for the 92,000 Naval officers and enlisted men trained to date to operate a nuclear propulsion plant is less than 0.8 rem. These radiation exposures are much less than the exposure the average American receives from natural background radiation or from medical diagnostic x-rays during his working lifetime (ref 11).

TABLE 1

SHIPYARD FIRST REACTOR PLANT OPERATION AND FIRST RADIOACTIVE OVERHAUL WORK

Shipyard	Year First New Construction Reactor Started Operation	Year First Reactor Plant Overhaul Started
Electric Boat Division[1] Groton, Connecticut	1954	1957
Portsmouth Naval Shipyard Portsmouth, New Hampshire	1958	1959
Mare Island Naval Shipyard[2] Vallejo, California	1958	1962
Pearl Harbor Naval Shipyard Pearl Harbor, Hawaii	None	1962
Charleston Naval Shipyard[2] Charleston, South Carolina	None	1963
Newport News Shipbuilding Newport News, Virginia	1960	1964
Bethlehem Steel Shipbuilding[3] (Subsequently Electric Boat Division) Quincy, Massachusetts	1961	None
New York Shipbuilding Corporation[3] Camden, New Jersey	1963	None
Norfolk Naval Shipyard Portsmouth, Virginia	None	1965
Puget Sound Naval Shipyard[2] Bremerton, Washington	None	1967
Ingalls Shipbuilding Division[3] Pascagoula, Mississippi	1961	1970

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[1] Electric Boat Division performed overhauls in 1957 - 1977 but only did new construction work again starting in 1978.

[2] Radioactive work of less extent than an overhaul commenced in Mare Island in 1958, in Charleston in 1961, and in Puget Sound in 1965.

[3] Work on Naval nuclear-powered ships was discontinued at Camden, New Jersey in 1967, at Quincy, Massachusetts in 1969, and at Pascagoula, Mississippi in 1980.

TABLE 2

OCCUPATIONAL RADIATION EXPOSURE RECEIVED BY PERSONNEL ASSIGNED TO TENDERS, BASES, AND NUCLEAR-POWERED SHIPS FROM OPERATION AND MAINTENANCE OF NAVAL NUCLEAR PROPULSION PLANTS

	Number of Persons Monitored Who Received Exposures in the Following Ranges of Rem for the Year						Total Personnel Monitored	Total Man-Rem
Year	0-1	1-2	2-3	3-4	4-5	>5*		
1954	36	0	0	0	0	0	36	8
1955	90	11	0	0	0	0	101	25
1956	108	10	4	0	0	0	122	50
1957	293	7	1	0	0	0	301	60
1958	562	11	3	0	0	0	576	100
1959	1,057	41	8	3	0	0	1,109	200
1960	2,607	88	8	4	3	1	2,711	375
1961	4,812	106	31	4	4	0	4,957	680
1962	6,788	182	75	31	17	2	7,095	1,312
1963	9,188	197	39	14	3	1	9,442	1,420
1964	10,317	331	93	35	15	14	10,805	1,964
1965	11,883	592	224	96	30	27	12,852	3,421
1966	18,118	541	156	95	44	28	18,982	3,529
1967	21,028	339	139	48	11	0	21,565	3,084
1968	24,200	373	103	20	2	0	24,698	2,463
1969	26,969	577	127	39	6	0	27,718	2,918
1970	26,206	610	134	30	0	0	26,980	3,089
1971	26,090	568	122	31	2	0	26,813	3,261
1972	33,312	602	180	13	1	0	34,108	3,271
1973	30,852	600	102	15	1	0	31,570	3,160
1974	18,375	307	65	2	0	0	18,749	2,142
1975	17,638	330	28	1	0	0	17,997	2,217
1976	17,795	369	56	9	0	0	18,229	2,642
1977	20,236	346	95	36	3	0	20,716	2,812
1978	22,089	290	23	1	0	0	22,403	2,234
1979	21,121	75	1	0	0	0	21,197	1,528
1980	21,767	78	0	0	0	0	21,845	1,494
1981	23,781	27	0	0	0	0	23,808	1,415
1982	27,563	59	0	0	0	0	27,622	1,660
1983	27,593	52	0	0	0	0	27,645	1,832
1984	30,096	10	0	0	0	0	30,106	1,729
1985	31,447	18	0	0	0	0	31,465	1,549
1986	33,944	16	0	0	0	0	33,960	1,593
1987	34,987	2	0	0	0	0	34,899	1,536
1988	34,782	4	0	0	0	0	34,786	1,422
1989	35,116	52	0	0	0	0	35,168	1,599
1990	36,036	15	0	0	0	0	36,051	1,501
1991	35,669	0	0	0	0	0	35,669	1,332
1992	34,940	2	0	0	0	0	34,942	1,460
1993	32,521	3	0	0	0	0	32,524	1,452
1994	30,586	0	0	0	0	0	30,586	1,201

Note: Data obtained from summaries rather than directly from original medical records. Total man-rem was determined by adding actual exposures for each individual monitored by each reporting command during the year. Total number monitored includes visitors to each reporting command. It is expected that the large effort to compile comparable man-rem data from original medical records would show differences no greater than five percent.

* Limit in the Naval Nuclear Propulsion Program was changed to 5 rem per year in 1967.

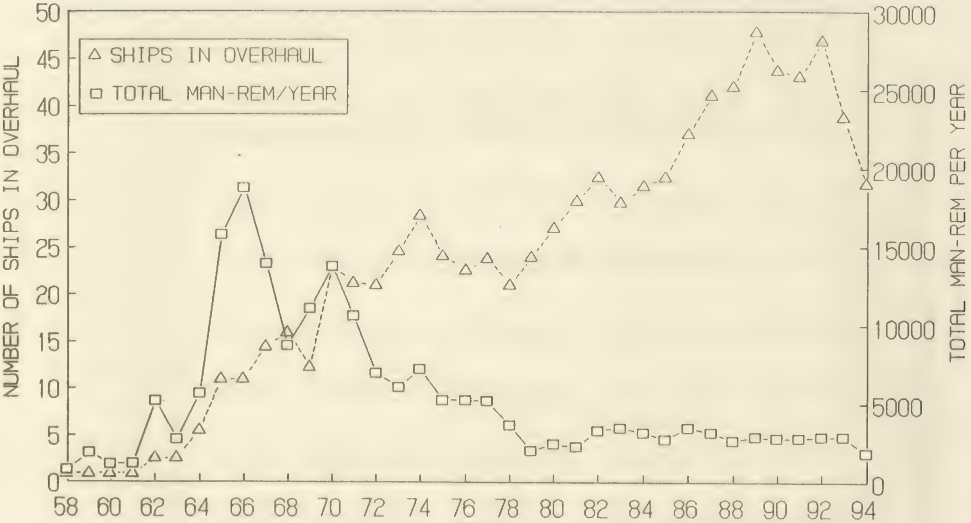
TABLE 3

OCCUPATIONAL RADIATION EXPOSURE RECEIVED BY SHIPYARD PERSONNEL FROM WORK ASSOCIATED WITH NAVAL NUCLEAR PROPULSION PLANTS

	Number of Persons Monitored Who Received Exposures in the Following Ranges of Rem for the Year						Total Personnel Monitored	Total Man-Rem
Year	0-1	1-2	2-3	3-4	4-5	>5*		
1954	508	9	3	5	3	0	528	64
1955	2,563	80	25	6	3	2	2,679	344
1956	2,834	20	5	2	0	1	2,862	162
1957	3,473	97	31	1	2	4	3,608	495
1958	5,766	165	46	10	4	7	5,998	779
1959	10,388	221	133	78	49	23	10,892	1,864
1960	12,047	198	97	22	4	0	12,368	1,158
1961	13,383	198	91	44	14	3	13,733	1,241
1962	14,411	642	366	247	146	108	15,920	5,222
1963	19,164	446	159	71	34	28	19,902	2,725
1964	24,044	804	445	215	144	41	25,693	5,678
1965	22,630	2,306	1,314	814	618	525	28,207	15,829
1966	29,490	2,352	1,623	1,057	1,139	513	36,174	18,804
1967	29,853	2,388	1,563	1,096	733	1	35,634	13,908
1968	30,159	1,344	773	496	279	0	33,051	8,719
1969	25,672	1,790	1,080	753	375	0	29,670	11,077
1970	21,182	2,127	1,382	740	492	0	25,923	13,084
1971	20,041	1,928	1,066	650	240	0	23,925	10,616
1972	17,514	1,692	849	139	5	0	20,199	7,002
1973	13,036	1,403	604	203	6	0	15,252	6,083
1974	12,587	1,464	745	311	50	0	15,157	7,206
1975	12,825	1,116	598	82	42	0	14,663	5,285
1976	13,042	1,268	633	30	0	0	14,973	5,310
1977	13,835	1,277	586	25	0	0	15,723	5,199
1978	13,700	1,016	268	0	0	0	14,984	3,680
1979	15,032	227	7	0	0	0	15,266	2,024
1980	15,287	377	0	0	0	0	15,664	2,402
1981	17,414	304	0	0	0	0	17,718	2,310
1982	19,210	648	0	0	0	0	19,858	3,353
1983	20,407	714	0	0	0	0	21,121	3,506
1984	20,684	502	0	0	0	0	21,186	3,181
1985	20,940	412	0	0	0	0	21,352	2,796
1986	21,186	875	0	0	0	0	22,061	3,495
1987	21,404	788	0	0	0	0	22,192	3,187
1988	20,969	543	0	0	0	0	21,512	2,702
1989	23,789	633	0	0	0	0	24,422	2,941
1990	25,077	501	0	0	0	0	25,578	2,812
1991	24,873	492	0	0	0	0	25,365	2,866
1992	24,703	440	0	0	0	0	25,143	2,936
1993	23,542	572	0	0	0	0	24,114	2,913
1994	18,914	362	0	0	0	0	19,276	1,889

Note: Data obtained from summaries rather than directly from original medical records. Total man-rem was determined by adding actual exposures for each individual monitored by each shipyard during the year. Total number monitored includes visitors to each shipyard. It is expected that the large effort to compile comparable man-rem data from original medical records would show differences no greater than five percent.

* Limit in the Naval Nuclear Propulsion Program was changed to 5 rem per year in 1967.



TOTAL RADIATION EXPOSURE RECEIVED BY
SHIPYARD PERSONNEL FROM WORK ON NAVAL
NUCLEAR PROPULSION PLANTS 1958-1994
FIGURE 2

TABLE 4

SHIPYARD AND FLEET DISTRIBUTION OF PERSONNEL RADIATION EXPOSURE

Year	Average Rem Per Person Monitored		Percent of Personnel Monitored Who Received Greater Than 1 Rem		Number of Personnel Who Exceeded 3 Rem/Quarter
	Fleet	Shipyard	Fleet	Shipyard	
1954	.22	.12	0	3.8	0
1955	.25	.13	10.9	4.3	0
1956	.41	.06	11.5	1.0	0
1957	.20	.14	2.7	3.7	0
1958	.17	.13	2.4	3.9	0
1959	.18	.17	4.7	4.6	8
1960	.14	.09	7.5	2.6	0
1961	.14	.09	2.9	2.5	0
1962	.18	.33	4.3	9.5	9
1963	.15	.13	2.7	3.7	2
1964	.18	.22	4.5	6.4	4
1965	.27	.56	7.5	19.8	5
1966	.19	.52	4.6	18.5	6
1967	.14	.39	2.5	16.2	3
1968	.10	.26	2.0	8.8	0
1969	.11	.37	2.7	13.5	0
1970	.11	.50	2.9	18.3	0
1971	.12	.44	2.7	16.2	0
1972	.10	.35	2.3	13.3	0
1973	.10	.40	2.3	14.5	0
1974	.11	.48	2.0	17.0	0
1975	.12	.36	2.0	12.5	0
1976	.14	.35	2.4	12.9	0
1977	.14	.33	2.3	12.0	0
1978	.10	.24	1.4	8.5	0
1979	.07	.13	0.4	1.5	0
1980	.07	.15	0.4	2.4	0
1981	.06	.13	0.1	1.7	0
1982	.06	.17	0.2	3.3	0
1983	.07	.17	0.2	3.4	0
1984	.06	.15	0.0	2.4	0
1985	.05	.13	0.1	1.9	0
1986	.05	.16	0.0	4.0	0
1987	.04	.14	0.0	3.6	0
1988	.04	.13	0.0	2.5	0
1989	.05	.12	0.1	2.6	0
1990	.04	.11	0.0	2.0	0
1991	.04	.11	0.0	1.9	0
1992	.04	.12	0.0	1.8	0
1993	.04	.12	0.0	2.4	0
1994	.04	.10	0.0	1.9	0
Average	.08	.25	1.2	8.0	
NAVYWIDE AVERAGE	0.16		4.4		

Table 5 provides information on the distribution of lifetime accumulated exposures for all personnel who were monitored in 1994 for radiation exposure associated with Naval nuclear propulsion plants. The 5 rem annual Federal radiation exposure limit would allow accumulating 100 rem in twenty years of work, or 200 rem in forty years. The fact that no one shown in Table 5 comes close to having accumulated this much radiation exposure is the result of deliberate efforts to keep lifetime radiation exposures low.

TABLE 5

DISTRIBUTION OF TOTAL LIFETIME RADIATION EXPOSURE ASSOCIATED WITH NAVAL NUCLEAR PROPULSION PLANTS

RANGE OF ACCUMULATED LIFETIME RADIATION EXPOSURES (REM)	PERCENTAGE OF PERSONNEL MONITORED IN 1994 WITH LIFETIME ACCUMULATED RADIATION EXPOSURE WITHIN THAT RANGE	
	FLEET	SHIPYARDS
0 - 5	99.81	87.49
5 - 10	0.18	8.50
10 - 15	<0.02	2.34
15 - 20	0	0.94
20 - 25	0	0.40
25 - 30	0	0.26
30 - 50	0	0.06
Greater than 50	0	<0.01

The radiation exposure limits used in the U. S. until the recent change to the Code of Federal Regulations, Title 10, Part 20 limited an individual's lifetime exposure to 5 rem for each year beyond age eighteen. With the recent change, lifetime exposure is not specifically limited, but is controlled as the result of the annual limit of 5 rem. In their most recent radiation protection recommendations, the National Council on Radiation Protection and Measurements (NCRP) encourages organizations to control lifetime accumulated exposure to less than 1 rem times the person's age (ref 12). Among all personnel monitored in 1994, there is currently no worker with a lifetime accumulated exposure greater than the NCRP recommended level of 1 rem times their age from radiation associated with Naval nuclear propulsion plants.

Table 6 provides a basis for comparison between the radiation exposure for light water reactors operated by the Navy and commercial nuclear-powered reactors licensed by the Nuclear Regulatory Commission. The 1993 data in this Nuclear Regulatory Commission table covers 110 licensed commercial nuclear-powered reactors with a total of 26,363 man-rem (ref 13). The 1993 average annual exposure of each worker at commercial nuclear-powered reactors was 0.16 rem.[4] Licensees of commercial nuclear-powered reactors reported 280 overexposures to external radiation during the years 1971 through 1993. Numbers in excess of 5 rem are not necessarily overexposures since prior to January 1, 1994, Nuclear Regulatory Commission regulations permitted exposures of 3 rem each quarter up to 12 rem per year within the accumulated total limit of 5 rem for each year of a person's age beyond eighteen.

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[4] This average was calculated by dividing total man-rem by total number of workers monitored as is done in Table 4. Reference 13 reports this value as 0.27 rem; however, it is calculated by dividing the total man-rem by the number of workers with measurable exposure (not adjusted for multiple reporting of transient individuals).

TABLE 6

PERSONNEL
RADIATION EXPOSURE FOR COMMERCIAL NUCLEAR-POWERED REACTORS LICENSED
BY U.S. NUCLEAR REGULATORY COMMISSION (REF 13)

SUMMARY OF ANNUAL WHOLE BODY EXPOSURE BY INCREMENT

			NUMBER OF INDIVIDUALS												
			EXPOSURE INCREMENT - REM												
YEAR	TOTAL MONITORED	NOT MEASURABLE	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	>10	TOTAL MAN-REM	NUMBER OF OVER-EXPOSURES
1971	9,581		8,996		315	137	105	17	11	0	0	0	0		2
1972	15,713		14,783		532	199	111	46	21	9	6	6	0		16
1973	33,823	19,043	9,798	2,468	1,584	422	251	125	71	38	16	7	0	13,963	19
1974	38,938	20,472	13,766	2,503	1,378	471	226	86	30	6	0	0	0	13,722	43
1975	44,343	18,854	18,289	3,948	1,872	691	423	169	60	24	12	0	1	20,879	14
1976	61,151	25,704	26,636	4,880	2,354	789	487	188	70	26	11	5	1	26,433	20
1977	62,420	23,562	28,053	5,649	2,856	1,288	661	186	89	47	23	6	0	32,508	27
1978	71,046	28,372	31,776	5,995	3,034	1,197	514	109	37	9	0	1	2	31,801	9
1979	103,449	43,330	47,018	7,572	3,404	1,400	545	117	42	17	3	0	0	39,982	23
1980	125,376	50,873	56,187	10,671	4,607	1,816	831	235	119	29	7	1	0	53,795	73
1981	115,919	39,265	57,931	11,170	4,811	1,999	533	103	93	9	3	1	1	54,144	7
1982	120,936	41,713	61,490	10,220	4,716	2,066	596	97	31	5	0	1	1	52,190	2
1983	126,652	47,048	59,773	11,345	5,332	2,269	716	121	38	8	2	0	0	56,472	8
1984	144,980	54,670	71,138	11,283	5,206	2,122	487	52	22	0	0	0	0	55,235	3
1985	146,462	59,634	72,054	10,040	3,575	1,001	157	1	0	0	0	0	0	43,042	3
1986	161,606	67,701	79,588	10,241	3,062	868	146	0	0	0	0	0	0	42,381	1
1987	181,343	85,181	82,813	10,611	2,192	477	69	0	0	0	0	0	0	40,401	1
1988	183,199	87,254	82,655	10,310	2,422	511	26	0	1	0	0	0	0	40,769	6
1989	184,007	83,947	89,408	8,634	1,614	370	34	0	0	0	0	0	0	35,939	1
1990	182,431	83,873	87,814	8,594	1,794	335	21	0	0	0	0	0	0	36,592	1
1991	178,315	87,250	83,916	5,975	938	219	17	0	0	0	0	0	0	28,527	0
1992	181,877	87,717	87,187	6,076	808	85	4	0	0	0	0	0	0	29,294	1
1993	168,989	82,842	80,132	5,296	638	76	5	0	0	0	0	0	0	26,363	0

Figures shown for the years 1977-1993 have been adjusted by the NRC for the multiple reporting of transient individuals.

INTERNAL RADIOACTIVITY

Policy and Limits

The Navy's policy on internal radioactivity for personnel associated with the nuclear propulsion program continues to be the same as it was more than three decades ago--to prevent significant radiation exposure to personnel from internal radioactivity. The limits invoked to achieve this objective are one-tenth of the levels allowed by Federal regulations for radiation workers. The results of this program have been that no one has received more than one-tenth the Federal annual internal occupational exposure limits from internal radiation exposure caused by radioactivity associated with Naval nuclear propulsion plants.

The basic Federal limit for radiation exposure to organs of the body from internal radioactivity has been 15 rem per year. There have been higher levels applied at various times for thyroid and for bones; however, use of these specific higher limits has not been necessary in the Naval Nuclear Propulsion Program.

Fifteen rem per year was the limit recommended for most organs of the body by the U. S. National Committee on Radiation Protection and Measurements in 1954 (ref 1), by the U. S. Atomic Energy Commission in the initial edition of reference (3) applicable in 1957, by the International Commission on Radiological Protection in 1959 (ref 2), and was adopted for Federal agencies when President Eisenhower approved recommendations of the Federal Radiation Council May 13, 1960.

In 1977 the International Commission on Radiological Protection revised its recommendations (ref 8), particularly regarding internal exposure. The new recommendations provided a method of combining, and controlling, exposure from internal radioactivity with exposure from external radiation. The effect of the 1977 recommendations was to raise the allowable dose to many organs, with no organ allowed to receive more than 50 rem in a year. In conjunction with these recommendations, more recent knowledge on the behavior and effect of internal radioactivity was used to derive new limits for control of internal radioactivity (ref 14). The Federal guidance approved by the President in 1987 adopted these revised recommendations and methods. As discussed below, cobalt-60 is the radionuclide of most concern for internal radioactivity in the Naval Nuclear Propulsion Program. The derived concentration limits for cobalt-60 established at the inception of the Program, which control exposure to below one-tenth the Federal annual internal occupational exposure limit, remain unchanged under the new recommendations and methodology.

Source of Radioactivity

Radioactivity can get inside the body through air, through water or food, and through surface contamination via the mouth, skin, or a wound. The radioactivity of primary concern is the activated metallic corrosion products on the inside surfaces of reactor plant piping systems. These are in the form of insoluble metallic oxides, primarily iron oxides. Reference 15 contains more details on why cobalt-60 is the radionuclide of most concern for internal radioactivity.

The design conditions for reactor fuel are much more severe for warships than for commercial power reactors. As a result of being designed to withstand shock, Naval reactor fuel elements retain fission products including fission gases within the fuel. Sensitive measurements are made frequently to verify the integrity of reactor fuel. Consequently, fission products such as strontium-90 and cesium-137 make no measurable contribution to internal exposure of personnel from radioactivity associated with Naval nuclear propulsion plants. Similarly, alpha emitters such as uranium and plutonium are retained within the fuel elements and are not accessible to personnel operating or maintaining a Naval nuclear propulsion plant.

Because of the high integrity of reactor fuel and because soluble boron is not used in reactor coolant for normal reactivity control in Naval reactors, the amounts of tritium in reactor coolant are far less than in typical commercial power reactors. The small amounts that are present are formed primarily as a result of neutron interaction with the deuterium naturally present in water. The radiation from tritium is of such low energy that the Federal limits for breathing or swallowing tritium are more than three hundred times higher than for cobalt-60. As a result, radiation exposure to personnel from tritium is far too low to measure. Similarly, the low energy beta radiation from carbon-14, which is formed in small quantities in reactor coolant systems as a result of neutron interactions with nitrogen and oxygen, does not add measurable radiation exposure to personnel operating or maintaining Naval nuclear propulsion plants.

Control of Airborne Radioactivity

Airborne radioactivity is controlled in maintenance operations such that respiratory equipment is not normally required. To prevent exposure of personnel to airborne radioactivity when work might expose radioactivity to the atmosphere, contamination containment tents or bags are used. These containments are ventilated to the atmosphere through high efficiency filters which have been tested to remove at least 99.95 percent of particles of a size comparable to cigarette smoke. Radiologically controlled areas such as reactor compartments are also required to be ventilated through high efficiency filters any time work which could cause airborne radioactivity is in progress. Airborne radioactivity surveys are required to be performed regularly in radioactive work areas. Any time airborne radioactivity above the limit is detected in occupied areas, work which might be causing airborne radioactivity is stopped. This conservative action is taken to minimize internal radioactivity even though the Naval Nuclear Propulsion Program's airborne radioactivity limit would allow continuous breathing for forty hours per week throughout the year to reach an annual exposure to the lungs of one-tenth the Federal limit. Personnel are also trained to use respiratory equipment when airborne radioactivity above the limit is detected. However, respiratory equipment is seldom needed and is not relied upon as the first line of defense against airborne radioactivity.

It is not uncommon for airborne radioactivity to be caused by radon naturally present in the air. Atmospheric temperature inversion conditions can allow this buildup of radioactive particles from radon. Radon can also build up in sealed or poorly ventilated rooms in homes or buildings made of stone or concrete, or it can migrate from the supporting ground. Most cases of airborne radioactivity above the Naval Nuclear Propulsion Program's conservative airborne radioactivity limit in occupied areas have been caused by radioactive particles from radon and not from the reactor plant. Procedures have been developed to reduce the radon levels when necessary and allow work to continue after it has been determined that the elevated airborne radioactivity is from naturally occurring radon.

Radon is also emitted from radium used for making dials luminous. There have been a number of cases where a single radium dial such as on a wristwatch has caused the entire atmosphere of a submarine to exceed the airborne radioactivity limit used for the nuclear propulsion plant. Radium in any form has been banned from submarines to prevent interference with keeping airborne radioactivity from the nuclear propulsion plant as low as practicable.

Control of Radioactive Surface Contamination

Perhaps the most restrictive regulations in the Naval Nuclear Propulsion Program's radiological controls program are established in the requirements for the control of radioactive contamination. Work operations involving potential for spreading radioactive contamination use containments to prevent personnel from becoming contaminated. The controls for radioactive contamination are so strict that precautions sometimes have had to be taken to prevent tracking contamination from fallout and natural sources into nuclear areas because the contamination control limits used in the nuclear areas were below the levels of fallout and natural contamination occurring outside in the general public areas.

Anticontamination clothing, including coveralls, hood (to cover the head, ears and neck), shoe covers and gloves, is provided when needed. However, the basic approach is to avoid the need for anticontamination clothing by containing the radioactivity.

As a result, most work on radioactive materials is performed with hands reaching into gloves installed in containments, making it unnecessary for the worker to wear anticontamination clothing. In addition to providing better control over the spread of radioactivity, this method has reduced radiation exposure since the worker can usually do his job better and faster in his normal work clothing. A basic requirement of contamination control is monitoring all personnel leaving any area where radioactive contamination could possibly occur. Workers are trained to survey themselves (i.e., frisk), and their performance is checked by radiological controls personnel. Frisking of the entire body is required, normally using sensitive hand-held survey instruments. Major work facilities are equipped with portal monitors, which are used in lieu of hand-held friskers. Personnel monitor before, not after, they wash. Therefore, washing or showering at the exit of radioactive work areas is not required. The basic philosophy is to prevent contamination, not wash it away.

Surveys for radioactive contamination are taken frequently by trained radiological controls personnel. Results of these surveys are reviewed by supervisory personnel to provide a double-check that no abnormal conditions exist. The instruments used for these surveys are checked against a radioactive calibration source daily and prior to use, and they are calibrated at least every six months.

Control of Food and Water

Smoking, eating, drinking and chewing are prohibited in radioactive areas. Aboard ship, drinking water is distilled from seawater by using steam. However, the steam is not radioactive because it is in a secondary piping system separate from the reactor plant radioactive water. In the event radioactivity were to leak into the steam system, sensitive radioactivity detection instruments which operate continuously would give early warning.

Wounds

Skin conditions or open wounds which might not readily be decontaminated are cause for temporary or permanent disqualification from doing radioactive work. Workers are trained to report such conditions to radiological controls or medical personnel, and radiological controls technicians watch for open wounds when workers enter radioactive work areas. In the initial medical examination prior to radiation work and during subsequent examinations, skin conditions are also checked. If the cognizant local medical officer determines a wound is sufficiently healed or considers the wound adequately protected, he may remove the temporary disqualification.

There have been only a few cases of contaminated wounds in the Naval Nuclear Propulsion Program. In most years, none occurred. Examples of such injuries which have occurred in the past include a scratched hand, a metallic sliver in a hand, a cut finger, and a puncture wound to a hand. These wounds occurred at the same time the person became contaminated. Insoluble metallic oxides which make up the radioactive contamination remain primarily at the wound rather than being absorbed into the blood stream. These radioactively contaminated wounds have been easily decontaminated. No case of a contaminated wound is known where the radioactivity present in the wound was as much as one one-thousandth of that permitted for a radiation worker to have in his body.

Monitoring for Internal Radioactivity

The radioactivity of most concern for internal radiation exposure from Naval nuclear propulsion plants is cobalt-60. Although most radiation exposure from cobalt-60 inside the body will be from beta radiation, the gamma radiation given off makes cobalt-60 easy to detect. Complex whole body counters are not required to detect cobalt-60 at low levels inside the body. For example, one-millionth of a curie of cobalt-60 inside the lungs or intestines will cause a measurement of two times above the background reading with the standard hand-held survey instrument used for personnel frisking. This amount of internal radioactivity will cause the instrument to reach the alarm level. Every person is required to monitor the entire body upon leaving an area with radioactive surface contamination. Monitoring the entire body is a requirement in the Naval Nuclear Propulsion Program; monitoring just hands and feet is not permitted. Therefore, if a person had as little as one-millionth of a curie of cobalt-60 internally, it would readily be detected.

Swallowing one-millionth of a curie of cobalt-60 will cause internal radiation exposure of about 0.08 rem. The radioactivity will pass through the body and be excreted within a period of a little more than one day.

One-millionth of a curie of cobalt-60 still remaining in the lungs one day after an inhalation incident is estimated to cause a radiation exposure of about 2 rem to the lungs over the following year and 6 rem total over a lifetime based on standard calculative techniques recommended by the International Commission on Radiological Protection (ref 14). These techniques provide a convenient way to estimate the amount of radiation exposure a typical individual might be expected to receive from small amounts of internally deposited radioactivity. These techniques account for the gradual removal of cobalt-60 from the lungs through biological processes and the radioactive decay of cobalt-60 with a 5.3 year half life. However, if an actual case were to occur, the measured biological elimination rate would be used in determining the amount of radiation exposure received.

In addition to the control measures to prevent internal radioactivity and the frisking frequently performed by those who work with radioactive materials, more sensitive internal monitoring is also performed. Procedures designed specifically for monitoring internal radioactivity use a type of gamma radiation sensitive scintillation detector which will reliably detect an amount of cobalt-60 inside the body that is more than one hundred times lower than the one-millionth of a curie used in the examples above. Shipyards typically monitor each employee for internal radioactivity as part of each radiation medical examination, which is performed before initially performing radiation work, after terminating radiation work, and periodically in between. Tenders, bases, and nuclear-powered ships require personnel to be internally monitored before initially assuming duties involving radiation exposure and upon terminating from such duties.

Shipyards, tenders, and bases also monitor periodically during the year groups of personnel who did the work most likely to have caused spread of radioactive contamination. Any person, whether at a shipyard, tender, base or aboard a nuclear-powered ship, who has radioactive contamination above the limit anywhere on the skin of his body during regular monitoring at the exit from a radioactive area is monitored for internal radioactivity with the sensitive detector. Also any person who might have breathed airborne radioactivity above limits is monitored with the sensitive detector.

Internal monitoring equipment is calibrated each work shift the equipment is in use. This calibration involves checking the equipment's response to a known source of radiation. In addition, the Navy has an independent quality assurance program in which organizations performing internal monitoring are tested on a periodic basis. This testing involves monitoring a human-equivalent torso phantom, which contains an amount of radioactivity traceable to standards maintained by the National Institute of Standards and Technology. The exact amount of radioactivity in the test phantom is not divulged to the organization being tested until after the test is complete. Any inaccuracies found by these tests that exceed established permissible error limits are investigated and corrected.

Results of Internal Monitoring in 1994

During 1994, approximately 14,000 personnel were monitored for internally deposited radioactivity using sensitive scintillation detectors at the eight shipyards performing work associated with Naval nuclear propulsion plants. Equipment and procedures provide detection of at least 0.01 millionths of a curie of cobalt-60.

No personnel monitored during 1994 had internal radioactivity above this level.

EFFECTS OF RADIATION ON PERSONNEL

Control of radiation exposure in the Naval Nuclear Propulsion Program has always been based on the assumption that any exposure, no matter how small, involves some risk; however, exposure within the accepted exposure limits represents a risk small compared with normal hazards of life. The basis for this statement is presented below.

Exposure to Radiation May Involve Some Risk

Since the inception of nuclear power, scientists have cautioned that exposure to ionizing radiation in addition to that from natural background may involve some risk. The National Committee on Radiation Protection and Measurements in 1954 (ref 1) and the International Commission on Radiological Protection in 1958 (ref 2) both recommended that exposures should be kept as low as practicable and that unnecessary exposure should be avoided to minimize this risk. The International Commission on Radiological Protection in 1962 (ref 16) explained the assumed risk as follows:

> "The basis of the Commission's recommendations is that any exposure to radiation may carry some risk. The assumption has been made that, down to the lowest levels of dose, the risk of inducing disease or disability in an individual increases with the dose accumulated by the individual, but is small even at the maximum permissible levels recommended for occupational exposure."

The National Academy of Sciences-National Research Council Advisory Committee on the Biological Effects of Atomic Radiation included similar statements in its reports in the 1956-1961 period and most recently in 1990 (ref 17). In 1960, the Federal Radiation Council stated (ref 4) that its radiation protection guidance did not differ substantially from recommendations of the National Committee on Radiation Protection and Measurements, the International Commission on Radiological Protection, and the National Academy of Sciences. This statement was again reaffirmed in 1987 (ref 9).

One conclusion from these reports is that radiation exposures to personnel should be minimized. This is not a new conclusion. It has been a major driving force of the Naval Nuclear Propulsion Program.

Radiation Exposure Comparisons

The success of the Naval Nuclear Propulsion Program in minimizing exposures to personnel can be evaluated by making some radiation exposure comparisons.

Annual Exposure

One important measure of personnel exposure is the amount of exposure an individual receives in a year. Tables 2 and 3 show that since 1980, no individual has exceeded 2 rem in a year while working in the Naval Nuclear Propulsion Program. Also, from Table 4 it can be seen that the average exposure per person monitored has remained essentially constant since 1980 at approximately 0.05 rem for Fleet personnel and 0.13 rem for Shipyard personnel. The following comparisons give perspective on these individual annual doses in comparison to Federal limits and other exposures:

o The maximum individual annual dose of 2 rem is less than the Federally allowed individual quarterly dose of 3 rem.

o The maximum individual annual dose of 2 rem is less than one-half the Federal annual limit of 5 rem.

o Although no person in the Naval Nuclear Propulsion Program has exceeded 2 rem in a year since 1980, annually between 800 and 7000 workers at NRC-licensed commercial nuclear-powered reactors have exceeded 2 rem in various years over this same period (ref 13).

o The average annual exposure of 0.05 rem for Fleet personnel is:

- one hundredth the Federal annual limit of 5 rem.
- approximately one third the average annual exposure of commercial nuclear power plant personnel (ref 13).
- approximately one third the average annual exposure received by U. S. commercial airline flight crew personnel due to cosmic radiation (ref 18).

o The average annual exposure of 0.13 rem for Shipyard personnel is:

- approximately one fortieth of the Federal annual limit of 5 rem.
- less than the average annual exposure of commercial nuclear power plant personnel (ref 13).
- less than the average annual exposure received by U. S. commercial airline flight crew personnel due to cosmic radiation (ref 18).

For additional perspective, the annual exposures for personnel in the Naval Nuclear Propulsion Program may also be compared to natural background and medical exposures:

o The maximum annual exposure of 2 rem is less than half the annual exposure from natural radioactivity in the soils in some places in the world, such as Tamil Nadu, India and Meaipe, Brazil (ref 19).

o The average annual exposure of 0.05 rem for Fleet personnel is:

- less than one fifth the average annual exposure to a member of the population in the U. S. from natural background radiation (ref 20).
- slightly less than the difference in the annual exposure due to natural background radiation between Denver, Colorado and Washington, D.C. (ref 20).

o Fleet personnel operating nuclear-powered submarines receive less total annual exposure than they would if they were stationed on shore performing work not involving occupational radiation exposure. This exposure is less, because of the low natural background radiation in a steel hull submerged in the ocean compared to the natural background radiation from cosmic, terrestrial, and radon sources on shore and the effectiveness of the shielding aboard ship.

o The average annual exposure of 0.13 rem for Shipyard personnel is:

- less than one half the average annual exposure to a member of the population in the U. S. from natural background radiation (ref 20).
- approximately equal to the exposure from common diagnostic medical x-ray procedures such as x-rays of the back (ref 21).

Collective Dose

The sum of all individual exposures gives the collective dose. Collective dose is used as a measure of the theoretical effect on the personnel occupationally exposed from the Naval Nuclear Propulsion Program taken as a group, and is an indicator of the effectiveness of the Program's efforts to minimize radiation exposure. From Tables 2 and 3, it can be seen that the collective dose received by all personnel in the Naval Nuclear Propulsion Program in 1994 was 3,090 man-rem. The following comparisons give perspective on this collective dose in comparison to collective doses from other occupations. This annual collective dose is:

o Less than one half the average annual collective dose to a comparable number of commercial nuclear power plant personnel (ref 13).

- Approximately equal to the average annual collective dose to a comparable number of persons in the medical field (ref 18).

- Less than one half the average annual collective dose to a comparable number of commercial airline flight crew personnel (ref 18).

For even further perspective, the annual collective dose to personnel in the Naval Nuclear Propulsion Program may also be compared to collective doses from radiation exposures not related to an individual's occupation. This annual collective dose is:

- Approximately one fifth the average annual collective dose of 15,000 man-rem to a comparable number of individuals in the U. S. population due to natural background radiation (ref 11).

- Approximately half the average annual collective dose of 6,300 man-rem to a comparable number of individuals in the U. S. population from diagnostic medical procedures such as x-rays of the back (ref 21).

- Approximately one twentieth the average annual collective dose of 65,000 man-rem to a comparable number of individuals in the U. S. population due to the natural radioactivity in tobacco smoke (ref 11) (rough comparison due to difficulty in estimating effective dose from smoking).

Conclusions on Radiation Exposure to Personnel

From the preceding comparisons, it is concluded that occupational exposures to individuals working in the Naval Nuclear Propulsion Program are small when compared to occupational exposures and limits and are within the range of exposures from natural background radiation in the U. S. and in the world. Additionally, the total dose to all persons (collective dose) each year is small compared to the collective doses to workers in other occupations, and insignificant compared to the collective doses to the U. S. population from natural background radiation, medical procedures, and tobacco smoke. In reference 18 the National Council on Radiation Protection and Measurements reviewed the exposures to the U. S. working population from occupational exposures. This included a review of the occupational exposures to personnel from the Naval Nuclear Propulsion Program. Based on this review, the National Council on Radiation Protection and Measurements concluded:

> "These small values (of occupational exposure) reflect the success of the Navy's efforts to keep doses as low as reasonably achievable (ALARA)."

Studies of the Effects of Radiation on Humans

Observations on the biological effects of ionizing radiation began to be made soon after the discovery of x-rays in 1895 (ref 17).

Numerous references are made in the early literature concerning the potential biological effects of exposure to ionizing radiation. These effects have been intensively investigated for many years (ref 22). Although there still exists some uncertainty about the exact level of risk, the National Academy of Sciences has stated: "It is fair to say that we have more scientific evidence on the hazards of ionizing radiation than on most, if not all, other environmental agents that affect the general public" (ref 23). A large amount of experimental evidence of radiation effects on living systems has come from laboratory studies on cell systems and on animals. However, what sets our extensive knowledge of radiation effects on humans apart from other hazards is the evidence that has been obtained from studies of human populations that have been exposed to radiation in various ways (ref 23). The health effects demonstrated from studies of people exposed to high doses of radiation (that is, significantly higher than current occupational limits) include the induction of cancer, cataracts, sterility, and developmental abnormalities from prenatal exposure. Animal studies have documented the potential for genetic effects.

Near the end of 1993, the Secretary of Energy requested the disclosure of all records and information on radiation experiments involving human subjects performed or supported by Department of Energy or predecessor agencies. The Naval Nuclear Propulsion Program has never conducted or supported any radiation experiments on humans. As discussed in this report, the Program has adopted exposure limits recommended by national and international radiation protection standards committees, such as the National Council on Radiation Protection and Measurements and the International Commission on Radiological Protection, and has relied upon conservative designs and disciplined operating and maintenance practices to minimize radiation exposure to levels well below these limits.

High Dose Studies

The human study populations which have contributed a large amount of information about the biological effects of radiation exposure include the survivors of the atomic bombings of Hiroshima and Nagasaki, x-rayed tuberculosis patients, victims of various radiation accidents, patients that have received radiation treatment for a variety of diseases, radium dial painters, and inhabitants of South Pacific islands that received unexpected doses from fallout due to early nuclear weapons tests. All of these populations received high or very high exposures.

The studies of atomic bomb survivors have provided the single most important source of information on the immediate and delayed effects of whole body exposure to ionizing radiation. The studies have been supported for over 40 years by the U. S. and Japanese governments and include analysis of the health of more than 100,000 survivors of the bombings. Continued follow-up of the Japanese survivors has changed the emphasis of concern from genetic effects to the induction of cancer (ref 24).

The induction of cancer has been the major late effect of radiation exposure in the atomic bomb survivors. The tissues most sensitive to the induction of cancer appear to be the bone marrow, thyroid, and female breast. Other cancers linked to radiation, but with a lower sensitivity, include cancers of the lung, stomach, colon, bladder, and esophagus. A wave-like pattern of leukemia induction was seen over time beginning approximately two years after exposure, peaking within 10 years of exposure and diminishing to near baseline levels after 30 years. For other cancers, a statistically significant excess was observed ten or more years after exposure, and the excess risk continues to rise slowly with time (ref 25).

While it is often stated that radiation causes all forms of cancer, many forms of cancer actually show no increase among atomic bomb survivors. These include chronic lymphocytic leukemia, Hodgkin's disease, and cancers of the liver, pancreas, prostate, and testis (ref 24).

To understand the impact of cancer induction from the atomic bombings, it is necessary to compare the number of radiation-related cancers to the total number of cancers expected in the exposed group. In a study sub-group of over 40,000 survivors with doses in the range of 1 rad to 400 rads from the bombings, 3,435 had died from cancer by 1985. Of these, 340 cancer deaths are attributed to radiation exposure (ref 25). At doses below 20 rads, the Japanese data have not revealed a statistically significant excess of cancer (ref 19). The cancer mortality experience of the other human study populations exposed to high doses referenced above is generally consistent with the experience of the Japanese atomic bomb survivors (ref 17).

About 30 years ago the major concern of the effects from radiation exposure centered on possible genetic changes. Ionizing radiation was known to cause such effects in many species of plants and animals. However, intense study of nearly 70,000 off-spring of atomic bomb survivors has failed to identify any increase in genetic effects. Based on a recent analysis, humans now appear less sensitive to the genetic effects from radiation exposure than previously thought (ref 24).

Radiation induced cataracts have been observed in atomic bomb survivors and persons treated with very high doses of x-rays to the eye. Approximately 20 years ago, potential cataract induction was considered a matter of concern. However, more recent research indicates the induction of cataracts by radiation is considered to require a high threshold dose. The National Academy of Sciences has stated the threshold for a vision-impairing cataract under conditions of protracted exposure is thought to be no less than 800 rem, which greatly exceeds the amount of radiation that can be accumulated by the lens through occupational exposure to radiation under normal working conditions (ref 17).

Radiation damage to the reproduction cells at very high doses has been observed to result in sterility. Impairment of fertility requires a dose large enough to damage or deplete most of the reproductive cells and is close to a lethal dose if exposure is to the whole body. The National Academy of Sciences estimates the threshold dose necessary to induce sterility in the male, or female, is approximately 350 rem, or more, in a single dose (ref 17). As in the case of cataract induction, this dose far exceeds the dose that can be received from occupational exposure under normal working conditions.

Developmental abnormalities were observed among children of the atomic bomb survivors that received high prenatal exposure (that is, their mother was pregnant at the time of the exposure). These abnormalities included stunted growth, small head size, and mental retardation. Additionally, recent analysis suggests that during a certain stage of development (the 8th to 15th week of pregnancy) the developing brain appears to be especially sensitive to radiation. A slight lowering of IQ might follow even relatively low doses of 10 rem or more (ref 17).

From this discussion of the health effects observed in studies of human populations exposed to high doses of radiation, it can be seen that the most important of the effects from the standpoint of occupationally exposed workers is the potential for induction of cancer (ref 17).

Low Dose Studies

The cancer causing effects of radiation on the bone marrow, female breast, thyroid, lung, stomach, and other organs reported for the atomic bomb survivors are similar to findings reported for other irradiated human populations. With few exceptions, however, the effects have been observed only at high doses and high dose rates. Studies of populations chronically exposed to low-level radiation have not shown consistent or conclusive evidence of an associated increase in the risk of cancer (ref 17). Attempts to observe increased cancer in human population exposed to low doses of radiation have been difficult.

One problem in such studies is the number of people needed to provide sufficient statistics. As the dose to the exposed group decreases, the number of people needed to detect an increase in cancer goes up at an accelerated rate. For example, for a group exposed to 1 rem (equivalent to the average lifetime accumulated dose in the Naval Nuclear Propulsion Program) it would take more than 500,000 people in order to detect an excess in lung cancers based on current estimates of the risk (ref 26). This is more than three times the number of persons that have performed nuclear work in all the Naval shipyards over the last four decades. Another limiting factor is the relatively short time since low dose occupational exposure started being received by large groups of people. As discussed previously, data from the atomic bomb survivors indicates a long latency period between the time of exposure and expression of the disease.

There is also the compounding factor that cancer is a generalization for a group of approximately 300 separate diseases, many being relatively rare and having different apparent causes. It is difficult to analyze low dose study data to eliminate the possibility that some factor other than radiation may be causing an apparent increase in cancer induction. This difficulty is particularly apparent in studies of lung cancer, for example, where smoking is such a common exposure, is poorly documented as to individual habits, and is by far the primary cause of lung cancer. Because cancer induction is statistical in nature, low dose studies are limited by the fact that an apparent observed small increase in a cancer may be due to chance alone.

Despite the above mentioned problems, and the lack of consistent or conclusive evidence from such studies to date, low dose studies fulfill an important function. They are the only means available for eventually testing the validity of current risk estimates derived from data accumulated at higher doses and higher dose rates.

Low dose groups that have been, and are currently being, studied include groups exposed as a result of medical procedures; exposed to fallout from nuclear weapons testing; living near nuclear installations; living in areas of high natural background radiation; and occupationally exposed to low doses of radiation. The National Academy of Sciences has reviewed a number of the low dose studies in references 17 and 23. Their overall conclusion from reviewing these studies was:

> "Studies of populations chronically exposed to low-level radiation, such as those residing in regions of elevated natural background radiation, have not shown consistent or conclusive evidence of an associated increase in the risk of cancer." (ref 17)

This conclusion has been supported by studies that have been completed since reference 17 was published. For example in 1990, the National Cancer Institute completed a study of cancer in populations living near 62 nuclear facilities in the U. S. that have been in operation prior to 1982. This study included commercial nuclear power plants and Department of Energy facilities involved in activities employing radioactive materials. The conclusion of the National Cancer Institute study was:

> "There was no evidence to suggest that the occurrence of leukemia or any other form of cancer was generally higher in

> the (counties near the nuclear facilities) than in the (counties remote from nuclear facilities)." (ref 27)

At the request of the Three Mile Island Public Health Fund, an investigation was performed by independent researchers of whether or not the pattern of cancer in the 10-mile area surrounding the Three Mile Island nuclear plant had changed after the TMI-2 accident in March 1979 and, if so, whether the change related to radiation releases from the plant. A conclusion of this study was:

> "For accident emissions, the authors failed to find definite effects of exposure on the cancer types and population subgroups thought to be most susceptible to radiation. No associations were seen for leukemia in adults or for childhood cancers as a group." (ref 28)

Of particular interest to workers in the Naval Nuclear Propulsion Program are studies of groups occupationally exposed to radiation. A recent survey of radiation-worker populations in the U. S. shows there are about 350,000 workers currently under study (ref 26). For more than a decade, Naval Nuclear Propulsion Program personnel, including those at shipyards and in the Fleet, have been included among populations being studied. These studies are discussed below.

In 1978, Congress directed the National Institute for Occupational Safety and Health (NIOSH) to perform a study of workers at the Portsmouth Naval Shipyard (PNS) in response to an article in the Boston Globe newspaper describing research by Dr. T. Najarian and Dr. T. Colton, assisted by the Boston Globe staff. The report alleged that Portsmouth workers who were occupationally exposed to low-level radiation suffered twice the expected rate of overall cancer deaths and five times the expected rate of leukemia deaths. Congress also chartered an independent oversight committee of nine national experts to oversee the performance of the study in order to assure technical adequacy and independence of the results. The following is a NIOSH summary of the study and their results. This summary was prepared by NIOSH at the conclusion of their last study phase in February 1986.

> "In December, 1980, NIOSH researchers completed the first report on a detailed study of the mortality among employees of the shipyard. Included in the study were all those who had been employed at PNS since January 1, 1952 (the earliest date that records existed that could identify former employees). In this report it was concluded that 'Excesses of deaths due to malignant neoplasms and specifically due to neoplasms of the blood and blood-forming tissue, were not evident in civilian workers at PNS...' in contrast to the results of the original study conducted by the physician. Later, in an investigation to determine why the physician's study results differed so greatly from the NIOSH

> study, a number of shortcomings in his original study were found that resulted in incorrect conclusions.
>
> "To make more certain that workers who had died from leukemia did not die because of radiation exposures received at the shipyard, a second study was conducted. That study compared the work and radiation histories of persons who died of leukemia, with persons who did not. In this analysis, again, no relationship was found between leukemia and radiation, although the NIOSH researchers were unable to rule out the possibility of other occupational exposures having a role.
>
> "In this current and third NIOSH paper, we investigated the role that radiation and other occupational exposures at the shipyard may have had in the development of lung cancer. This study is an outgrowth of an observation made in the 1980 NIOSH study referred to above. The observation was that persons with greater than 1 rem cumulative exposure to radiation had an increase in lung cancer.
>
> "In this report entitled, 'Case Control Study of Lung Cancer in Civilian Employees at the Portsmouth Naval Shipyard,' we compared the work and radiation histories of persons who died of lung cancer with persons who did not. We found that persons with radiation exposures in excess of 1 rem had an excess risk of dying of lung cancer, but the radiation was in all likelihood not the cause. This was due to the fact that persons with radiation exposure tended also to have exposure to asbestos (a known lung carcinogen) and to welding by-products (suspected to contain lung carcinogens)."

Thus, the earlier reports of excess cancer rates among Portsmouth Naval Shipyard workers exposed to low-level radiation were not substantiated by NIOSH. The NIOSH studies were published in the scientific literature in references 29 through 32.

In 1991, researchers from the Johns Hopkins University, Baltimore, Maryland, completed a more comprehensive epidemiological study of the health of workers at the six Navy shipyards and two private shipyards that service Navy nuclear-powered ships (ref 33). This independent study evaluated a population of 70,730 civilian workers over a period from 1957, beginning with the first overhaul of the first nuclear-powered submarine USS NAUTILUS, through 1981, to determine whether there was an excess risk of leukemia or other cancers associated with exposure to low levels of gamma radiation.

This study did not show any cancer risks linked to radiation exposure. Furthermore, the overall death rate among radiation-exposed shipyard workers was less than the death rate for the general U. S. population. It is well recognized that many worker populations have lower mortality rates than the general population, because the workers must be healthy to perform their work. This study shows that the radiation-exposed shipyard population falls in this category.

The death rate for cancer and leukemia among the radiation-exposed workers was slightly lower than that for non-radiation-exposed workers and that for the general U. S. population. However, an increased rate of mesothelioma, a type of respiratory system cancer linked to asbestos exposure, was found in both radiation-exposed and non-radiation-exposed shipyard workers, although the number of cases was small reflecting the rarity of this disease in the general population. The researchers suspect that shipyard worker exposure to asbestos in the early years of the Program, when the hazards associated with asbestos were not as well understood as they are today, might account for this increase.

In conclusion, the Johns Hopkins study found no evidence to conclude that the health of people involved in work on U. S. nuclear-powered ships has been adversely affected by exposure to low levels of radiation incidental to this work. Additional studies are planned to investigate the observations and update the study with data beyond 1981.

In 1987, the Yale University School of Medicine completed a study (ref 34) sponsored by the U. S. Navy Bureau of Medicine and Surgery of the health of Navy personnel assigned to nuclear submarine duty between 1969 and 1981. The objective of the study, begun in 1979, was to determine whether the enclosed environment of submarines has had any impact on the health of these personnel. Although not strictly designed as a cancer study of a low dose population, the study did examine cancer mortality as a function of radiation exposure. The study concluded that submarine duty has not adversely impacted the health of crewmembers. Furthermore, there was no correlation between cancer mortality and radiation exposure. These observations were based on comparison of death rates among the approximately 76,000 officers and enlisted submariners (all who served between 1969 and 1981) against an aged-matched peer group. The results of this study were published in the Journal of Occupational Medicine (ref 35).

In 1989, an article in Navy News and Undersea Technology reported on the Yale study with inaccurate statements regarding the study results. The article alleged that sailors in Fleet ballistic missile submarines (SSBNs) had an elevated cancer rate compared to national rates. The allegations were based on an incorrect interpretation of the data. The Navy News article only considered the cancer mortality of enlisted sailors from SSBNs that had been discharged from the Navy and reported an increase in the number of cancers versus the number expected. However, the article failed to recognize that the Navy medically discharges service members with serious diseases who are no longer fit for full duty. Thus, the cancer death data for the active duty group of SSBN sailors was skewed low, and the discharged group was skewed high. The active duty and discharged groups must be combined to account for the skewing resulting from the Navy's medical discharge policy, in order for a valid comparison to be made with the civilian peer group. Table 7, derived from the Yale study results, shows this comparison for enlisted submariners. The officer data show similar trends. (Note the SSBN population was larger than the fast attack submarine (SSN) population, hence the larger number of expected cancer deaths. Also, SSBN & SSN is defined as service aboard both types of submarines.) As seen in Table 7, cancer deaths among both SSBN and SSN sailors are actually less than cancer deaths among their age-matched peers in the civilian population.

TABLE 7

YALE STUDY RESULTS

Enlisted Submariners (76,160)	Cancer Deaths Observed	Cancer Deaths Expected
SSBN	55	61
SSN	18	36
SSBN & SSN	4	12
Total	77	109

Numerical Estimates of Risk from Radiation

One of the major aims of the studies of exposed populations as discussed above is to develop numerical estimates of the risk of radiation exposure. These risk estimates are useful in addressing the question of how hazardous radiation exposure is, evaluating and setting radiation protection standards, and helping resolve claims for compensation by exposed individuals.

The development of numerical risk estimates has many uncertainties. As discussed above, excess cancers attributed to radiation exposure can only be observed in populations exposed to high doses and high dose rates. However, the risk estimates are needed for use in evaluating exposures from low doses and low dose rates. Therefore, the risk estimates derived from the high dose studies must be extrapolated to low doses. This extrapolation introduces a major uncertainty. The shape of the curve used to perform this extrapolation becomes a matter of hypothesis (that is, assumption) rather than observation. The inability to observe the shape of this extrapolated curve is a major source of controversy over the appropriate risk estimate.

Scientific committees, such as the National Academy of Science (ref 17), the United Nations Scientific Committee on the Effects of Atomic Radiation (ref 19), and the National Council on Radiation Protection and Measurements (ref 12) all conclude that accumulation of dose over weeks, or months, as opposed to in a single dose, is expected to reduce the risk appreciably. A dose rate effectiveness factor (DREF) is applied as a divisor to the risk estimates at high doses to permit extrapolation to low doses. The National Academy of Sciences (ref 17) suggested that a range of DREF's between 2 and 10 may be applicable and reported a best estimate of 4 based on laboratory animal studies. However, despite these conclusions by the scientific committees, some critics argue that the risk actually increases at low doses while others argue that cancer induction is a threshold effect and the risk is zero below the threshold dose. As stated at the beginning of this section, the Naval Nuclear Propulsion Program has always conservatively assumed radiation exposure, no matter how small, may involve some risk.

In 1972, both the United Nations Scientific Committee on the Effects of Atomic Radiation and the National Academy of Sciences-National Research Council Advisory Committee on the Biological Effects of Ionizing Radiations issued reports (refs 36 and 37) which estimated numerical risks for specific types of cancer from radiation exposure to humans. Since then, national and international scientific committees have been periodically re-evaluating and revising these numerical estimates based on the latest data and information. The most recent risk estimates are from the same two committees and are contained in their 1988 and 1990 reports, respectively (refs 17 and 19). In these reports, both committees provided risk estimates which were larger than the risk estimates in their previous reports. This increase in the new estimates was due to the use of new models for projecting the risk into the future, revised dose estimates for survivors of the Hiroshima and Nagasaki atomic bombs, and additional data on the cancer experience by both atomic bomb survivors and persons exposed to radiation for medical purposes. A risk estimate for radiation-induced cancer derived from the most recent analysis, references 17 and 19, can be briefly summarized as follows:

> In a group of 10,000 workers in the U. S., a total of about 2,000 (20 percent) will normally die of cancer. If each of the 10,000 received over his or her career an additional one rem, then an estimated 4 additional cancer deaths (0.04 percent) might occur. Therefore, the average worker's lifetime risk of cancer has been increased nominally from 20 percent to 20.04 percent.

The above risk estimate was extrapolated from estimates applicable to high doses and dose rates using a DREF of about 2. This estimate probably overstates the true lifetime risk at low doses and dose rates, because a DREF of 2 is at the low end of probable DREF values. The National Academy of Sciences (ref 17), in assessing the various sources of uncertainty, concluded that the true lifetime risk may be contained within an interval which extends from zero to about a factor of three higher than the above. The Academy points out that the lower limit of uncertainty extends to zero risk, "as the possibility that there may be no risks from exposure comparable to external natural background radiation cannot be ruled out."

These statistics can be used to develop a risk estimate for personnel exposed to radiation associated with Naval nuclear propulsion plants. As stated previously, the average lifetime accumulated exposure is 1.2 rem for all Shipyard personnel and 0.8 rem for all Fleet personnel. Therefore, based on a Program-wide average of about 1 rem and the risk estimate presented above, the average worker's lifetime cancer risk in the Naval Nuclear Propulsion Program may be increased a very small amount, from 20 percent to 20.04 percent.

Risk Comparisons

Table 8 compares calculated risks from occupational exposure in the Naval Nuclear Propulsion Program to other occupational risks. This allows us to evaluate the relative hazard of this risk versus risks normally accepted in the workplace. It should be kept in mind that the radiation risk is calculated based on risk estimates, whereas the other occupational risks are based on actual death statistics for the occupation.

TABLE 8

LIFETIME OCCUPATIONAL RISKS

Occupation (ref 12)	Lifetime Risk[5] Percent
Mining, quarrying	2.8
Agriculture	2.2
Construction	1.8
Transportation and Public Utilities	1.3
All Industries Average	0.5
Government	0.4
Services	0.3
Manufacturing	0.3
Trade	0.2
Radiation exposure associated with Naval nuclear propulsion plants (risk estimate)	0.04

Further perspective on the lifetime risk from radiation exposure in the Naval Nuclear Propulsion Program may be gained by comparison to other everyday risks as shown in Table 9.

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[5] Assumes working from 18 to 65 (47 years).

TABLE 9

SOME COMMONPLACE LIFETIME RISKS

Risk (ref 38)	Lifetime Risk[6] Percent
Smoking	12
Motor Vehicle Accidents	1.3
Home Accidents	0.79
Falls	0.45
Drowning	0.26
Fires	0.20
Accidental Poisoning	0.10
Firearms	0.07
Electrocution	0.04
Radiation exposure associated with Naval nuclear propulsion plants (risk estimate)	0.04

Low-Level Radiation Controversy

In low-level radiation, as in other areas, a very effective way to frighten people is to claim that no one knows what the effects are. This has been repeated so often that it has almost become an article of faith that no one knows the effects of low-level radiation on humans. The critics are able to make this statement because, as discussed above, human studies of low-level radiation exposure are unable to be conclusive as to whether or not an effect exists in the exposed groups, because of the extremely low incidence of an effect. Therefore, assumptions are needed regarding extrapolation from high dose groups. The reason low dose studies are not able to be conclusive is because the risk, if it exists at these low levels, is too small to be seen in the presence of all the other risks of life.

The fact that a controversy exists is evidence that the radiation risk is small.

In summary, the effect of radiation exposures at occupational levels is extremely small. There are physical limits to how far scientists can go to ascertain precisely the size of this risk, but it is known to be small. Instead of proclaiming how little is known about low-level radiation, it is more appropriate to emphasize how much is known about the small actual effects.

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[6] Smoking assumes at risk from 32 to 72 (40 years) and Motor Vehicle Accidents assume at risk from 18 to 72 (54 years). Other risks assume at risk for lifetime (72 years).

Conclusions on the Effects of Radiation on Personnel

This perspective provides a better position to answer the question, "Is radiation safe?" If safe means zero effect, then the conclusion would have to be that radiation may be unsafe. But to be consistent, background radiation and medical radiation would also have to be considered unsafe. Or more simply, being alive is unsafe.

"Safe" is a relative term. Comparisons are necessary for actual meaning. For a worker, safe means the risk is small compared to other risks accepted in normal work activities. Aside from work, safe means the risk is small compared to the risks routinely accepted in life.

Each recommendation on limits for radiation exposure from the scientific and advisory organizations referenced herein has emphasized the need to minimize radiation exposure. Thus, the Naval Nuclear Propulsion Program is committed to keeping radiation exposure to personnel as low as reasonably achievable. No level of radiation exposure has been identified for which responsible organizations have agreed there is no effect. Similarly, it is difficult to find a single activity of man for which one can confidently state the risk is zero. However, the above summaries show that the risk from radiation exposure associated with Naval nuclear propulsion plants is low compared to the risks normally accepted in industrial work and in daily life outside of work.

CLAIMS FOR RADIATION INJURY TO PERSONNEL

Personnel who consider they have or might have had occupational injury may file claims. Naval shipyard personnel are employees of the U. S. Government and therefore file claims with the U. S. Department of Labor's Office of Workers' Compensation. Shipyards hold no hearings on injury claims. They are not handled in an adversary procedure. The claim does not even have to be filed through the shipyard. The shipyard is not permitted to appeal a decision, but the employee may appeal. The primary consideration in the Federal laws and procedures set up for injury compensation is to take care of the Federal employee. The program to compensate Federal employees is well publicized.

In private shipyards injury compensation claims are handled under the Longshore and Harbor Workers' Compensation Act. The claim may be handled through the shipyard's insurance carrier or by a U. S. Department of Labor claims examiner. Either the employee or the employer may appeal.

Claims for military personnel concerning prior duty are handled through the Veterans Administration.

There have been a total of 244 claims filed for injury from radiation associated with Naval nuclear propulsion plants. One hundred twenty-six originated from employees of the six Naval shipyards, fifty-eight from private shipyards, and sixty from Navy personnel. These claims are summarized in Table 10. As shown in Table 10, more than half the claims have been filed for injuries other than cancer or leukemia. Three-fourths of the claims filed for cancer or leukemia involved workers with lifetime radiation exposures less than the 5 rem, which is the exposure a nuclear worker is permitted to receive in one year by Federal Regulations.

TABLE 10

CLAIMS FOR RADIATION INJURY TO PERSONNEL

Injury Claimed	Claims Filed	Claims Awarded	Claims Denied or Deferred	Claims Active
Leukemia	35	3	30	2
Cancer Other Than Leukemia	83	1	77	5
Other	126	5	111	10
TOTAL	244	9	218	17

Naval shipyard personnel's workers' compensation claims are generally decided upon by the Office of Workers' Compensation within one to two years of filing. The Longshore and Harbor Workers' Compensation Act, however, will not require a decision on a case subsequent to filing unless it is actively pursued by the claimant. For cases that are not actively pursued, the claim may lie dormant for many years theoretically to be pursued at a later date, whereupon a decision will be made. For the purpose of Table 10, claims which have had no activity in the last five years are listed as deferred.

Nine claims have been awarded for which radiation was an alleged causal agent: three for leukemia in 1968, 1979, and 1991; four for cataracts of the eyes in 1971, 1974, 1977, and 1982; one for leukocytosis in 1969, and one for bile duct/pancreatic cancer in 1980. The Office of Workers' Compensation awarded three claims and the Veterans Administration awarded six claims. For VA claims, other considerations such as whether the injury is reasonably considered to have occurred while the claimant was in the Armed Forces and other causal factors are used when awarding claims. The Navy considers all nine of these awards were unjustified on the basis of radiation exposure as follows:

- One leukemia case had a lifetime occupational exposure of 5.38 rem. The claimant had also received hundreds of rem in medical radiation exposure for adenoids. If radiation were to be selected as the cause of this leukemia, then the occupational exposure could not have been more than a tiny part of the total radiation exposure.

- The second leukemia case had a lifetime occupational exposure of 1.00 rem. This amount of radiation exposure is small and less than 10 percent of the amount of exposure the claimant will receive during his life from natural background and medical radiation.

- The third leukemia case had a lifetime occupational exposure of 4.20 rem (2.98 rem of which was received while in the U. S. Navy). This amount of exposure is less than 10 percent of the exposure the claimant was allowed under Federal limits for the twelve years he was occupationally exposed to ionizing radiation.

- Two of the cataract cases had lifetime radiation exposures of about 3 rem, one case had less than 1 rem, and one case had 0.02 rem. Of these cases, even the highest exposure, 3 rem, is hundreds of times smaller than needed to produce cataracts in the eyes.

- The leukocytosis (elevated white blood cell count) case had a lifetime occupational exposure of 15.5 rem which was received over an eight year period. This case was evaluated by the medical research center of a national laboratory, which concluded that the cause of the leukocytosis was unknown. In addition, leukocytosis has not been shown to be associated with low-level occupational radiation exposure.

- The bile duct and pancreatic cancer case was awarded for a lifetime occupational exposure of 2.37 rem. This amount of radiation is less than the quarterly limit of 3 rem and the annual limit of 5 rem. Further, this person received about four times the amount of his occupational exposure from natural background and medical exposures over his lifetime.

In addition to the above claims, six suits have been filed in court alleging injury from radiation. One suit involved leukemia; three involved cancers; and the two others did not involve a cancer. Four of these suits were dismissed, one was settled, and one is pending.

AUDITS AND REVIEWS

Checks and cross-checks, audits, and inspections of numerous kinds have been shown to be essential in maintaining high standards of radiological controls. First, each worker is specially trained in radiological controls as it relates to his own job. Second, written procedures exist which require verbatim compliance. Third, radiological controls technicians and their supervisors oversee radioactive work. Fourth, personnel independent of radiological controls technicians are responsible for personnel radiation exposure records.

Fifth, a strong independent audit program is required covering all radiological controls requirements. In all shipyards this radiological audit group is independent of the radiological controls organization and its findings are reported regularly to senior shipyard management, including the shipyard commander. This group performs continuing surveillance of radioactive work. It conducts in-depth audits of specific areas of radiological controls. This group checks all radiological controls requirements at least annually.

Sixth, the U. S. Department of Energy assigns to each shipyard a representative who reports to the Director of the Naval Nuclear Propulsion Program at headquarters. One assistant to this representative is assigned full time to audit and review radiological controls, both in nuclear-powered ships and in the shipyard. Seventh, Naval Nuclear Propulsion Program headquarters personnel conduct periodic inspections of radiological controls in each shipyard. Similarly, there are multiple levels of audits and inspections for the other Naval shore facilities, tenders, and nuclear-powered ships.

In addition, various aspects of the Naval Nuclear Propulsion Program have been reviewed by other Government agencies. For example, the National Institute for Occupational Safety and Health conducted an evaluation of the radiological controls program at Portsmouth Naval Shipyard in conjunction with its mortality study at the shipyard (discussed earlier in this report). NIOSH published the results of its evaluation in a report (ref 39) in April 1983, which stated the following conclusions (quoted verbatim):

- The employee dose data provided NIOSH by Portsmouth Naval Shipyard is complete and provides a reasonable estimate of the individual worker's dose.
- The Portsmouth Naval Shipyard personnel dosimetry program provides accurate internal and external dose data.
- The external and internal doses received by Portsmouth Naval Shipyard personnel are low compared to present occupational exposure guidelines.

- The probability of unreported accidents/incidents or undocumented exposures is extremely small.
- The radiological controls employed are adequate to protect the worker from internal and external hazards.
- The impact of the nuclear work at Portsmouth Naval Shipyard to the surrounding environment is minimal or negligible.
- Nuclear operations at Portsmouth Naval Shipyard are not contributing a significant radiation dose to the general public.

ABNORMAL OCCURRENCES

It is a fact of human nature that people make mistakes. The key to a good radiological controls program is to find the mistakes while they are small and prevent the combinations of mistakes that lead to more serious consequences. The preceding section on inspections supports the conclusion that the Naval Nuclear Propulsion Program gives more attention to errors and their prevention than to any other single subject. Requiring constant focus on improving performance of radiological work has proven effective in reducing errors.

In addition, radiological controls technicians are authorized and required to stop anyone performing work in a manner which could lead to radiological deficiencies. One definition of "deficiency" is a failure to follow a written procedure verbatim. However, the broadest interpretation of the term "deficiency" is used in the Navy's radiological controls program. Anything involved with radiation or radioactivity which could have been done better is also considered a radiological deficiency.

Radiological deficiencies receive management attention. There is a higher level of deficiency that is defined as a radiological incident. Incidents receive further management review, including evaluation by senior personnel at headquarters and review by the Director of the Naval Nuclear Propulsion Program. Improvement programs over the years have constantly aimed at reducing the numbers of radiological incidents. As improvements occurred, the definition of what constituted an incident was changed to define smaller deficiencies as incidents. These changes were necessary so that the incident reporting system would continue to play a key role in upgrading radiological controls. As a result, it is not practicable to measure performance over time merely by counting numbers of radiological incidents or deficiencies.

The Department of Energy and its predecessors have used a separate reporting system that has been nearly constant over time and therefore can be used as a basis for comparison. This system defines a Type A radiation exposure occurrence as an event which causes an individual's external radiation exposure to exceed 25 rem in one incident or one year (ref 40). The Nuclear Regulatory Commission uses a similar criteria to define an abnormal occurrence; abnormal occurrences are included in the NRC's quarterly report to Congress. The Navy regularly evaluates radiological events using these criteria for comparison.

Since the beginning of operations in the Naval Nuclear Propulsion Program, there has not been a single incident which met the criteria of a Type A or abnormal occurrence.

The policy of the Navy is to provide for close cooperation and effective communication with state radiological officials involving occurrences that might cause concern because of radiological effects associated with the ships or shore facilities. The Navy has reviewed radiological matters with state radiological officials in the states where Naval nuclear-powered ships are based or overhauled. Although there has never been an abnormal occurrence which has resulted in radiological effects to the public outside these facilities or which resulted in radiological injury to residents of the states working inside these facilities, states were notified when inquiries showed public interest in the possibility such events had occurred.

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ENVIRONMENTAL MONITORING AND DISPOSAL OF RADIOACTIVE WASTES FROM U.S. NAVAL NUCLEAR POWERED SHIPS AND THEIR SUPPORT FACILITIES

NAVAL NUCLEAR PROPULSION PROGRAM
DEPARTMENT OF THE NAVY
WASHINGTON, D.C. 20362

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ENVIRONMENTAL MONITORING AND DISPOSAL OF RADIOACTIVE WASTES FROM U.S. NAVAL NUCLEAR-POWERED SHIPS AND THEIR SUPPORT FACILITIES

1994

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ABSTRACT

The environmental effect of disposal of radioactive wastes originating from U.S. Naval nuclear propulsion plants and their support facilities is assessed. The total long-lived gamma radioactivity in liquids discharged to all ports and harbors from the one hundred twenty-one Naval nuclear-powered ships and supporting tenders, Naval bases and shipyards was less than 0.002 curie in 1994. This report confirms that procedures used by the Navy to control releases of radioactivity from U.S. Naval nuclear-powered ships and their support facilities are effective in protecting the environment and the health and safety of the general public. These procedures have ensured that no member of the general public has received measurable radiation exposure as a result of current operations of the Naval Nuclear Propulsion Program.

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SUMMARY

The radioactivity in materials discussed in this report originates in the pressurized water reactors of U.S. Naval nuclear-powered ships. As of the end of 1994, the U.S. Navy had 99 nuclear-powered submarines, 13 nuclear-powered surface ships and two moored training ships in operation. Support facilities involved in construction, maintenance, overhaul and refueling of these nuclear propulsion plants include eight shipyards, twelve tenders and four submarine bases. This report describes disposal of radioactive liquid, transportation and disposal of solid wastes, monitoring of the environment to determine the effect of radioactive releases, and updates reports on this subject issued by the Navy in references 1 through 5.* This report concludes that radioactivity associated with U.S. Naval nuclear-powered ships has had no significant or discernible effect on the quality of the environment. A summary of the radiological information supporting this conclusion follows:

From the start of the Naval Nuclear Propulsion Program, the policy of the U.S. Navy has been to reduce to the minimum practicable the amounts of radioactivity released into harbors. Navy procedures to accomplish this have been reviewed with the U.S. Department of Energy, the U.S. Nuclear Regulatory Commission and the U.S. Environmental Protection Agency. The total long-lived gamma radioactivity released within twelve miles from shore from all U.S. Naval nuclear-powered ships and their support facilities in recent years is shown in Table 1; this includes all harbors both U.S. and foreign entered by these ships.

As a measure of the significance of these data, if one person were able to drink the entire amount of radioactivity discharged into any harbor in any of the last twenty-four years, that person would not exceed the annual radiation exposure permitted for an individual worker by the Nuclear Regulatory Commission.

Environmental monitoring is conducted by the U.S. Navy in U.S. and foreign harbors frequented by U.S. Naval nuclear-powered ships. This monitoring consists of analyzing harbor sediment, water and marine life samples for radioactivity associated with Naval nuclear propulsion plants, radiation monitoring around the perimeter of support facilities and effluent monitoring. Environmental samples from each of these harbors are also checked at least annually by a Department of Energy laboratory to ensure analytical procedures are correct and standardized.

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* References are listed on page 32.

Independent environmental monitoring has been conducted by the Environmental Protection Agency in U.S. harbors during the past several decades. The results of these extensive, detailed surveys have been consistent with Navy results. These surveys have again confirmed that U.S. Naval nuclear-powered ships and support facilities have had no significant effect on the radioactivity of the environment.

TABLE 1 RADIOACTIVE LIQUID RELEASED TO HARBORS FROM U.S. NAVAL NUCLEAR-POWERED SHIPS AND THEIR SUPPORT FACILITIES

Year	Number of Ships In Operation	Radioactivity-Curies (less tritium)
1971	100	less than 0.002
1972	104	less than 0.002
1973	107	less than 0.002
1974	111	less than 0.002
1975	113	less than 0.002
1976	115	less than 0.002
1977	120	less than 0.002
1978	124	less than 0.002
1979	126	less than 0.002
1980	126	less than 0.002
1981	133	less than 0.002
1982	137	less than 0.002
1983	142	less than 0.002
1984	144	less than 0.002
1985	147	less than 0.002
1986	149	less than 0.002
1987	148	less than 0.002
1988	148	less than 0.002
1989	147	less than 0.002
1990	143	less than 0.002
1991	140	less than 0.002
1992	135	less than 0.002
1993	121	less than 0.002
1994	112	less than 0.002

RADIOACTIVE LIQUID PROCESSING AND CONTROL

Policy and Procedures Minimizing Release of Radioactivity in Harbors

The policy of the U.S. Navy is to reduce to the minimum practicable the amounts of radioactivity released to the environment, particularly within twelve miles of shore including harbors. This policy is consistent with applicable recommendations issued by the Federal Radiation Council (incorporated into the Environmental Protection Agency in 1970), U.S. Nuclear Regulatory Commission, National Council on Radiation Protection and Measurements, International Commission on Radiological Protection, International Atomic Energy Agency, and National Academy of Sciences--National Research Council (references 6 through 15). Keeping releases small minimizes the radioactivity available to build up in the environment or to concentrate in marine life. To implement this policy of minimizing releases, the Navy has issued standard instructions defining radioactive release limits and procedures to be used by U.S. Naval nuclear-powered ships and their support facilities. These instructions were reviewed by the U.S. Department of Energy, the U.S. Nuclear Regulatory Commission and the U.S. Environmental Protection Agency.

Source of Radioactivity

In the shipboard reactors, pressurized water circulating through the reactor core picks up the heat of nuclear reaction. The reactor cooling water circulates through a closed piping system to heat exchangers which transfer the heat to water in a secondary steam system isolated from the primary cooling water. The steam is then used as the source of power for the propulsion plant as well as for auxiliary machinery. Releases from the shipboard reactors occur primarily when reactor coolant water expands as a result of being heated to operating temperature; this coolant passes through a purification system ion exchange resin bed prior to being transferred from the ship.

The principal source of radioactivity in liquid effluents is trace amounts of corrosion and wear products from reactor plant metal surfaces in contact with reactor cooling water. Radionuclides with half-lives of approximately one day or greater in these corrosion and wear products include tungsten 187, chromium 51, hafnium 181, iron 59, iron 55, nickel 63, niobium 95, zirconium 95, tantalum 182, manganese 54, cobalt 58, and cobalt 60. The most predominant of these is cobalt 60, which has a 5.3 year half-life. Cobalt 60 also has the most restrictive concentration limit in water as listed by organizations which set radiological standards in references 6 and 7 for these corrosion and wear radionuclides. Therefore, cobalt 60 is the primary radionuclide of interest for naval nuclear propulsion plants.

Radioactivity Removal From Liquid at Shore Facilities

Radioactive liquids at shore facilities are collected in stainless steel tanks and processed through a processing system to remove most of the radioactivity (exclusive of tritium) prior to collection in a clean tank for reuse. Even after processing to approximately 10^{-8} microcuries of gamma radioactivity per milliliter, reactor coolant is reused rather than discharged. Figure 1 shows a simplified block diagram of the liquid processing system which consists of particulate filters, activated carbon bed filters, mixed hydrogen hydroxyl resin and colloid removal resin beds. This type of processing system has been developed and used successfully to produce high quality water containing very low radioactivity levels.

Liquid Releases in Harbors

The total amount of long-lived gamma radioactivity released into harbors and seas within twelve miles of shore have been less than 0.002 curie during each of the last twenty-four years. This total is for releases from U.S. Naval nuclear-powered ships and from the supporting shipyards, tenders and submarine bases, and at operating bases and home ports in the U.S. and overseas and all other U.S. and foreign ports which were visited by Naval nuclear-powered ships.

To put this small quantity of radioactivity into perspective, it is less than the quantity of naturally occurring radioactivity (reference 16) in the volume of saline harbor water occupied by a single nuclear-powered submarine.

Short-Lived Radionuclides

Reactor coolant also contains short-lived radionuclides with half-lives of seconds to hours. Their highest concentrations in reactor coolant are from nitrogen 16 (7 second half-life), nitrogen 13 (10 minute half-life), fluorine 18 (1.8 hour half-life), argon 41 (1.8 hour half-life) and manganese 56 (2.6 hour half-life). For the longest-lived of these, about one day after discharge from an operating reactor, the concentration is reduced to one thousandth of the initial concentration, and in about two days the concentration is reduced to one millionth. Further, essentially all of the water is transferred to shore facilities for processing and reuse rather than discharged. Consequently, these short-lived radionuclides are not important for liquid release considerations.

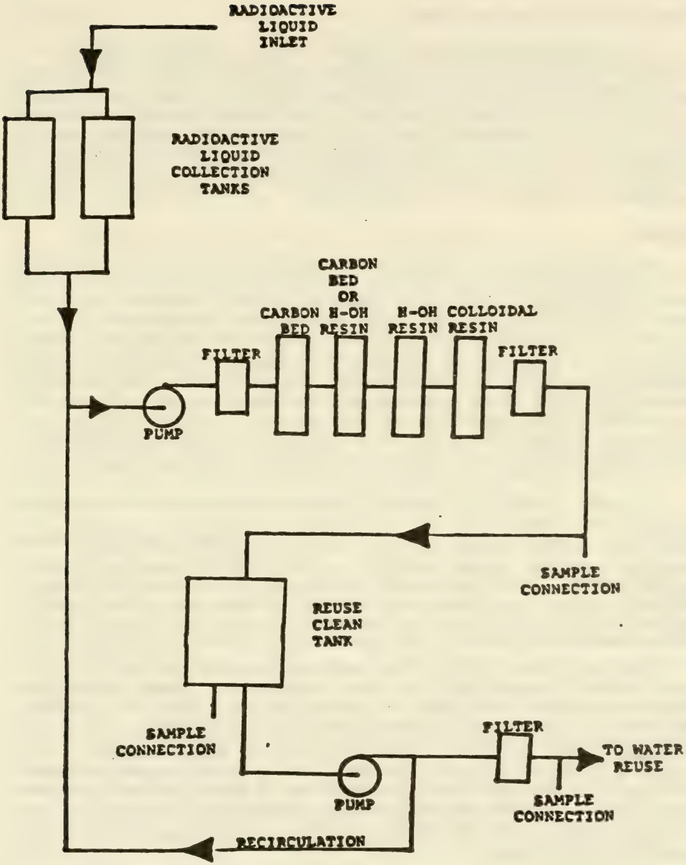


FIGURE 1
SIMPLIFIED DIAGRAM OF RADIOACTIVE LIQUID PROCESSING SYSTEM

Fission Product Radionuclides

Fission products produced in the reactor, including iodine and the fission gases krypton and xenon, are retained within the fuel elements. However, trace quantities of naturally occurring uranium impurities in reactor structural materials release small amounts of fission products to reactor coolant. The concentrations of fission products and the volumes of reactor coolant released are so low, however, that the total radioactivity attributed to long-lived fission product radionuclides comprises only a small fraction of the total long-lived gamma radioactivity releases discussed elsewhere in this section of this report.

Tritium

Small amounts of tritium are formed in reactor coolant systems as a result of neutron interaction with the approximately 0.015 percent of naturally occurring deuterium present in water, and other nuclear reactions. Although tritium has a twelve year half-life, the radiation produced is of such low energy that the radioactivity concentration guide issued by the International Commission on Radiological Protection, the National Council on Radiation Protection and Measurements, the U.S. Nuclear Regulatory Commission and by other standard-setting organizations is at least one hundred times higher for tritium than for cobalt 60. This tritium is in the oxide form and is chemically indistinguishable from water; therefore, it does not concentrate significantly in marine life or collect on sediment as do other radionuclides.

Tritium is naturally present in the environment because it is generated by cosmic radiation in the upper atmosphere. Reference 17 reports that the production rate from this source is about four million curies per year. This results in a global inventory of about seventy million curies of which about forty-five million curies are in the oceans (reference 18). Because of this naturally occurring tritium, much larger releases of tritium than are conceivable from Naval nuclear reactors would be required to make a measurable change in the background tritium concentration.

The total amount of tritium released annually from all U.S. Naval nuclear-powered ships and their supporting tenders, bases and shipyards has been less than two hundred curies. Most of this has been into the ocean greater than twelve miles from shore. The total tritium released annually from the entire nuclear Navy is less than single electrical generating nuclear power stations typically release each year (reference 19). Total tritium released annually into harbors within twelve miles of shore is less than one curie. Such releases are too small to increase measurably the tritium concentration in the environment. Therefore, tritium has not been combined with the data on other radionuclides in this section of this report.

Carbon 14

Carbon 14 is also formed in small quantities in reactor coolant systems as a result of neutron interactions with nitrogen and oxygen. Carbon 14 decays with a half-life of 5,730 years; however, only low energy beta radiation is emitted as a result of this decay process. As a result, the radioactivity concentration guide for carbon 14 in its chemical form in air issued by the International Commission on Radiological Protection, the National Council on Radiation Protection and Measurements, the U.S. Nuclear Regulatory Commission and by other standard-setting organizations is sixty times higher than for cobalt 60.

Carbon 14 occurs naturally in the environment. It is generated from cosmic radiation interactions with nitrogen and oxygen in the upper atmosphere and oxidized to form carbon dioxide. Carbon 14 is chemically indistinguishable from other isotopes of carbon. The carbon dioxide diffuses and convects throughout the atmosphere and enters the earth's carbon cycle. Reference 20 states that the earth's natural carbon 14 inventory is estimated to be about two hundred and fifty million curies of which approximately ninety-five percent resides in the oceans. The total amount of carbon 14 released annually from the operation of all U.S. Naval nuclear-powered ships and their supporting tenders, bases and shipyards has been less than one hundred curies, essentially all of which is released at sea beyond twelve miles from shore. Since the inventory of naturally occurring carbon 14 is so large, it is extremely unlikely that releases from Naval nuclear reactors could result in a measurable change in the background concentration of carbon 14.

Liquid Releases at Sea

Radioactive liquids incidental to the operation of the nuclear propulsion plants are released at sea under strict controls. These ocean releases are consistent with recommendations the Council on Environmental Quality made in 1970 to the President in reference 21, and consistent with the Marine Protection, Research and Sanctuaries Act, reference 22. Procedures and limits for ocean releases have been consistent with recommendations made by the National Academy of Sciences--National Research Council in reference 10 and by the International Atomic Energy Agency in reference 11. These releases have contained much less radioactivity than these reports considered would be acceptable. Total long-lived gamma radioactivity released farther than twelve miles from shore by U.S. Naval nuclear-powered ships and supporting tenders is shown in Table 2 for recent years. This is the total amount released from over one hundred ships at different times of the year in the open sea at long distances from land in small incremental amounts, and under rapid dispersal conditions due to wave action. The quantity of long-lived gamma radioactivity released to the open ocean in 1994 was 0.4 curie, which is less than the naturally occurring radioactivity (reference 16) in a cube of sea water approximately one hundred yards on a side.

TABLE 2 TOTAL RADIOACTIVITY IN LIQUID RELEASED AT SEA ORIGINATING FROM U.S. NAVAL NUCLEAR-POWERED SHIPS

	Radioactivity-Curies (less tritium)
1975	0.4
1976	0.4
1977	0.4
1978	0.4
1979	0.4
1980	0.4
1981	0.4
1982	0.4
1983	0.4
1984	0.4
1985	0.4
1986	0.4
1987	0.4
1988	0.4
1989	0.4
1990	0.4
1991	0.4
1992	0.4
1993	0.4
1994	0.4

Loss of USS THRESHER and USS SCORPION

Two U.S. Naval nuclear-powered submarines have been lost at sea in the Atlantic Ocean. The submarine THRESHER sank 10 April 1963, 200 miles southeast of Maine in water 8,500 feet deep. The submarine SCORPION sank between 21 and 27 May 1968, 400 miles southwest of the Azores in more than 10,000 feet of water. The reactors used in all U.S. Naval submarines and surface ships are designed to minimize potential hazards to the environment even under the most severe casualty conditions such as the actual sinking of the ship. First, the reactor core is so designed that it is physically impossible for it to explode like a bomb. Second, the reactor fuel elements are made of materials that are extremely corrosion resistant, even in sea water. The reactor core could remain submerged in sea water for centuries without releases of fission products while the radioactivity decays, since the protective cladding on the fuel elements corrodes only a few millionths of an inch per year. Thus, in the event of a serious accident where the reactor is completely submerged in sea water, the fuel elements will remain intact for an indefinite period of time, and the radioactive material contained in these fuel elements should not be released. The maximum rate of release and dispersal of the radioactivity in the ocean, even if the protective cladding on the fuel were destroyed, would be so low as to be insignificant.

Radioactive material could be released from this type of reactor only if the fuel elements were actually to melt and, in addition, the high-strength, all-welded reactor system boundary were to rupture. The reactor's many protective devices and inherent self-regulating features are designed to prevent any melting of the fuel elements. Flooding of a reactor with sea water furnishes additional cooling for the fuel elements and so provides added protection against the release of radioactive fission products.

Radiation measurements, water samples, bottom sediment samples and debris collected from the area where THRESHER sank were analyzed for radioactivity shortly after the sinking and again in 1965 by various laboratories. Similarly, sea water and bottom sediment samples taken near SCORPION's hull were analyzed for radioactivity. In 1977, 1983 and 1986, followup samples of water, sediment, and marine life were collected from the immediate THRESHER debris areas. In 1979 and 1986, followup samples of water, sediment, marine life and debris were collected from the immediate SCORPION debris areas. None of these samples showed any evidence of release of radioactivity from the reactor fuel elements in either THRESHER or SCORPION. However, cobalt 60 released from both THRESHER and SCORPION coolant systems was detectable at low levels in the sediment samples in the debris areas. Cobalt 60 was not detectable in samples of water or marine life. The maximum cobalt 60 concentration measured in the sediment at either site was 1.16×10^{-6} uCi/gm and most samples were much less than this concentration. This is less than one-tenth of the concentration of naturally occurring radioactivity in the sediment. For perspective, if a person's diet contained cobalt 60 at the maximum concentration detected in the sediment, that person would receive less than ten percent of the radiation exposure received from natural background radioactivity.

SCORPION carried two torpedoes with nuclear weapons containing plutonium. While the monitoring campaign was for the express purpose of assessing the impacts from the nuclear reactor, sediment, water, and marine life samples collected at the SCORPION site in 1986 were also analyzed for plutonium. Total plutonium radioactivity concentrations and the relative concentrations of plutonium isotopes were typical of background concentrations due to fallout from nuclear weapons testing. Thus, there is no evidence of leakage of plutonium from nuclear weapons that were on the submarine when it sank.

Summary information on the radiological surveys of the THRESHER and SCORPION sites was published in reference 23. In 1993, the Navy issued detailed unclassified reports of the radiological environmental monitoring of the THRESHER and SCORPION sites, references 24 and 25. This monitoring demonstrates that the THRESHER and SCORPION have not had a significant effect on the radioactivity in the environment.

SOLID RADIOACTIVE WASTE DISPOSAL

During maintenance and overhaul operations, solid low-level radioactive wastes consisting of contaminated rags, plastic bags, paper, filters, ion exchange resin and scrap materials are collected from nuclear-powered ships and their support facilities. These low-level radioactive materials are required to be strictly controlled to prevent loss. These controls include Naval accountability procedures which require serialized tagging and marking and signatures by radiologically trained personnel.

Table 3 summarizes the total radioactivity and volumes of radioactive solid waste disposed of during the last five years. Table 3 includes all waste generated by U.S. Naval nuclear-powered ships and the listed support facilities since all radioactive solid waste generated by U.S. nuclear-powered ships is transferred to the listed facilities. The quantity of solid radioactive waste in any one year from a particular facility depends on the amount and type of support work performed that year. Table 3 does not include fuel or other classified radioactive components shipped to Department of Energy facilities.

Figure 2 shows that the total annual volume of solid low-level radioactive waste was substantially reduced in the 1970's, despite increasing numbers of ships. This reduction was accomplished simultaneously with reduction in personnel radiation exposure, as described in reference 26. This reduction was accomplished by several techniques including a total containment concept for radiological work which minimizes the spread of radioactivity to non-radioactive materials, use of preplanning and mockups to minimize rework, reusing rather than disposing of tools and equipment, use of radioactive liquid processing procedures which minimize depletion of processing media, use of compaction equipment and efficient packaging to fully use space in disposal containers, and separating solid waste that requires special disposal owing to its radioactive content from that which does not. The latter is achieved by work site controls and by use of sensitive detection equipment to detect radioactivity only slightly greater in concentration than that found in natural materials such as soil, rocks, water, and biological matter (see reference 18) thus requiring the material to be handled as radioactive for waste disposal purposes. Material which passes the screening provided by this sensitive detection equipment can be disposed of as ordinary waste. Challenging goals are set by each shipyard to ensure continuing management attention to minimizing generation of waste in radiological work.

The annual volume of solid low-level radioactive waste disposed of in 1994 by the entire Naval Nuclear Propulsion Program, as shown in Table 3, could be contained in a cube measuring about fifteen yards on a side. The total annual volume is approximately twenty-three percent of the solid low-level radioactive waste generated annually by all nuclear electric power reactors and approximately twelve percent of the total volume of solid low-level radioactive waste buried in all U.S. commercial disposal sites each year (reference 27).

Solid radioactive waste materials are packaged in strong tight containers, shielded as necessary and shipped to burial sites licensed by the U.S. Nuclear Regulatory Commission or a State under agreement with the Nuclear Regulatory Commission. Solid radioactive materials from Naval nuclear-powered ships have not been dumped at sea since 1970 when the Navy issued procedures prohibiting sea disposal of solid radioactive materials. Shipyards and other shore facilities have never been permitted to dispose of radioactive solid wastes by burial on their own sites.

The Low-Level Radioactive Waste Policy Amendments Act of 1985 establishes that the states are responsible, either individually or in multi-state compacts, for providing for the disposal of low-level radioactive waste from private and non-Department of Energy Federal Government generators. Under this law, a waste compact may prohibit disposal of waste from outside the compact. Only two waste disposal sites are operating. The Northwest Compact site in Richland, Washington accepts waste only from the Northwest and Rocky Mountain Compact, which includes Navy facilities in Washington and Hawaii. As of June 30, 1994, the Southeast Compact site in Barnwell, South Carolina accepted waste only from Southeast Compact generators. The Southeast Compact includes Navy facilities in Virginia, South Carolina and Georgia. The site in Barnwell, South Carolina is scheduled to close at the end of 1995.

In view of the significantly increased disposal fees and the anticipated closure of low-level radioactive waste disposal sites, a concerted effort has been underway to reevaluate radioactive equipment which was in storage for potential future use and to dispose of that equipment for which no specific future need was identified. For example, some of this equipment was no longer needed due to the declining fleet size. Due to this effort and the closure of Mare Island and Charleston Naval Shipyards, the amount of solid low-level radioactive waste shipped for disposal during the past four years was higher than in other recent years.

Beginning in 1996, low-level radioactive waste generators outside of the Northwest Compact (and the Rocky Mountain Compact) including hospitals, universities, nuclear power plants, and industrial users of radioactive materials will be forced to store their low-level radioactive waste until the states open new disposal sites. Navy facilities will be similarly affected.

TABLE 3 DISPOSED RADIOACTIVE SOLID WASTE FROM U.S. NAVAL NUCLEAR-POWERED SHIPS AND THEIR SUPPORT FACILITIES FOR 1990 THROUGH 1994

FACILITY	1990 THOUSAND CUBIC FEET	1990 CURIES	1991 THOUSAND CUBIC FEET	1991 CURIES	1992 THOUSAND CUBIC FEET	1992 CURIES	1993 THOUSAND CUBIC FEET	1993 CURIES	1994 THOUSAND CUBIC FEET	1994 CURIES
Kittery, Maine Portsmouth Naval Shipyard	1	<1	4	9	2	2	0	0	3	17
Groton, New London, Conn. Electric Boat Division, State Pier and Sub Base	2	1	2	<1	1	<1	1	1	2	2
Newport News, Virginia Newport News Shipbuilding	8	52	15	3	19	5	9	<1	3	7
Norfolk, Virginia Naval Shipyard and Tenders	12	1	17	1	36	15	32	40	22	165
Charleston, South Carolina Naval Shipyard, Tenders, and Naval Nuclear Power Training Unit	8	138	13	122	8	14	9	246	22	48
Vallejo, California Mare Island Naval Shipyard	5	1	5	1	8	31	10	4	29	6
Bremerton, Washington Puget Sound Naval Shipyard	8	92	27	86	23	59	16	18	11	35
Pearl Harbor, Hawaii Naval Shipyard and Sub Base	5	1	3	6	3	1	2	3	2	50
TOTAL	49	287	86	229	100	228	79	313	94	330

NOTES:

(1) This table includes all radioactive waste from tenders and nuclear-powered ships. This radioactivity is primarily cobalt 60. This radioactive waste is shipped to burial facilities licensed by the U.S. Nuclear Regulatory Commission or a State.

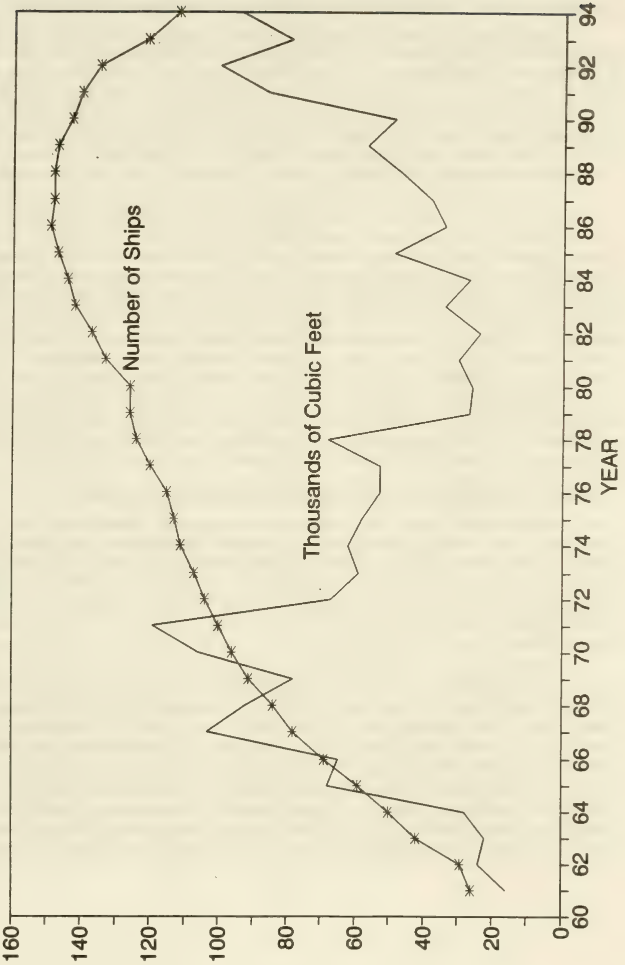
(2) Volumes less than 500 cubic feet are reported as 1 thousand cubic feet and activities less than 0.5 curie are reported as <1 curie.

(3) The Naval Nuclear Power Training Unit is the site of the moored training ships.

(4) Due to closure of a commercial disposal site and provisions of Federal and State law, radioactive waste generators in Maine, including Portsmouth Naval Shipyard, did not have access to a disposal site in 1993. Thus, no radioactive waste shipments were made to a disposal site in 1993 from this shipyard.

Figure 2:

Radioactive Solid Waste Disposal Volumes in the Naval Nuclear Propulsion Program 1961-1994



Deactivation of Ingalls Shipbuilding Radiological Facilities

From 1958 to 1980, Ingalls Shipbuilding was engaged in the construction and overhaul of Naval nuclear-powered ships in Pascagoula, Mississippi. The shipyard radiological facilities which supported this work were deactivated between 1980 and 1982 by removing and disposing of all radioactive material associated with Naval nuclear propulsion plants. Useful items, such as tools and equipment that were radioactively contaminated, were transferred to other organizations in the Naval Nuclear Propulsion Program. The remaining radioactive material was disposed of as solid waste.

Extensive radiological decommissioning surveys were performed to verify the removal of this radioactive material. Direct radiological surveys were performed on over 274,000 square feet of building and facility surfaces. Over 11,000 samples of these surfaces as well as soil, ground cover and concrete were taken from all areas where radioactive work was previously performed. These samples were analyzed using sensitive laboratory equipment. In addition, both the State of Mississippi and the U.S. Environmental Protection Agency (reference 28) performed overcheck surveys of the deactivated facilities. After these surveys were completed, the Ingalls facilities were released for unrestricted use. Personnel who subsequently occupy these facilities will not receive measurable radiation exposure above natural background levels that exist in areas not affected by Naval nuclear propulsion plant work. Reference 28 is the report of the survey of the Ingalls facilities by the Environmental Protection Agency.

Closure of Charleston and Mare Island Naval Shipyards

Mare Island Naval Shipyard was engaged in construction, overhaul, and refueling of Naval nuclear-powered ships from 1956 to 1995. Charleston Naval Shipyard was engaged in overhaul and refueling from 1959 to 1994. The 1993 round of the Base Closure and Realignment Act process approved closure of these shipyards. Similar to the process followed at Ingalls Shipbuilding, the radiological facilities at both Charleston and Mare Island are being deactivated.

As at Ingalls, extensive radiological decommissioning surveys are being performed to verify the removal of radioactive material. At each shipyard, direct radiological surveys will be performed on over 2,000,000 square feet of building and facility surfaces and over 40,000 samples of soil, ground cover, and concrete are being analyzed using sensitive laboratory equipment. This survey effort is approximately half completed at both shipyards. Only a few localized areas have been found with trace concentrations of cobalt 60 radioactivity. Simple, proven cleanup methods will remediate these areas. Both the radiological deactivation work and the survey work are being performed by shipyard workers. The

Navy's radiological deactivation and verification surveys will be completed by April 1996. Both the EPA and the states plan to perform overcheck surveys upon completion of the Navy work. Personnel who subsequently occupy these facilities will not receive measurable radiation exposure above natural background levels.

The successful radiological deactivation and closure work at Ingalls, Charleston, and Mare Island demonstrates that the stringent control over radioactivity exercised by the Naval Nuclear Propulsion Program from its inception has been successful in preventing radiological contamination of the environment and in avoiding expensive radiological liabilities at shipyards.

Mixed Radioactive and Hazardous Waste

Waste which is both radioactive and chemically hazardous is regulated under both the Atomic Energy Act and the Resource Conservation and Recovery Act (RCRA) as "mixed waste." Within the Naval Nuclear Propulsion Program, concerted efforts are taken to avoid commingling radioactive and chemically hazardous substances so as to minimize the potential for generation of mixed waste. For example, these efforts include avoiding the use of acetone solvents, lead-based paints, lead shielding in disposal containers, and chemical paint removers. As a result of Program efforts to avoid the use of chemically hazardous substances in radiological work, Program activities typically generate less than thirty-five cubic meters of mixed waste each year. This small amount of mixed waste, along with less than one hundred cubic meters of mixed waste from previous Program work, is stored pending the development of Department of Energy and commercial mixed waste treatment capacity required to deal with over 600,000 cubic meters of non-Program Department of Energy mixed waste. Pursuant to the requirements of the 1992 Federal Facility Compliance Act, mixed waste site treatment plans are being prepared and will be completed by October 1995 to address treatment of all Program mixed waste streams.

Disposal of Decommissioned, Defueled Naval Submarine Reactor Plants

During the 1980's, the nuclear powered submarines constructed in the 1950's and 1960's began to reach the end of their service life. In 1982, the Navy, with the Department of Energy as a cooperating agency, published a Draft Environmental Impact Statement (EIS) on the disposal of decommissioned, defueled Naval submarine reactor plants. The Draft EIS was widely distributed to individuals, environmental organizations, state and local officials, and other Federal agencies. All substantive comments were analyzed and addressed in the Final EIS which was issued in 1984 (reference 23). Although the Navy had evaluated the alternative of disposing of the defueled ships by sinking at sea, the preferred alternative identified in the Final EIS was to dispose of the defueled reactor plants at a Federal disposal facility already used for low-level radioactive waste disposal. In

December 1984, the Secretary of the Navy issued a Record of Decision to proceed with land disposal.

A submarine is constructed with the nuclear power plant inside a single section of the ship called the reactor compartment. Before the reactor compartment is disposed of, the nuclear fuel is removed and handled in the same manner as nuclear fuel removed during refueling of nuclear-powered ships. The defueled reactor compartments are removed from decommissioned submarines in drydocks at the Puget Sound Naval Shipyard in Bremerton, Washington. After removal from a submarine, the reactor compartment is sealed and loaded onto a barge for transport to the Port of Benton on the Columbia River near the Department of Energy Hanford Site. At the Port of Benton, the reactor compartment is transferred to a land transporter which carries the reactor compartment to the disposal trench on the Hanford Site. Further information on this process is contained in the Final EIS (reference 23). The first defueled reactor compartment was shipped to Hanford in 1986. Eight defueled reactor compartments were shipped in 1994, which brought the total number shipped to forty-three.

TRANSPORTATION OF RADIOACTIVE MATERIAL

Shipments of radioactive materials in the Naval Nuclear Propulsion Program are required to be made in accordance with applicable regulations of the U.S. Department of Transportation, U.S. Department of Energy, and U.S. Nuclear Regulatory Commission. The purpose of these regulations is to ensure that shipments of radioactive material are adequately controlled to protect the environment and the health and safety of the general public. These regulations are applicable to all radioactive material shipments.

The above regulations provide requirements for the container design, certification, and identification as applicable for the specific quantity, type and form of radioactivity being shipped. Naval shipping container design requirements invoke shielding and integrity specifications and meet all regulatory requirements. They provide for testing of container designs, training and qualification of workers who construct containers, and quality control inspections during fabrication to ensure the containers will meet their design requirements.

In addition to imposing requirements of Federal transportation regulations, the Navy has issued standard instructions to further control shipments of radioactivity associated with U.S. Naval nuclear propulsion plants. These standard instructions result in a quality assurance program which includes inspections and assessments by independent organizations and senior management. Organizations making shipments are required to prepare local procedures which require use of compliance checklists and management review to ensure compliance with applicable Department of Transportation, Navy and disposal sites requirements. Only specially trained, designated people, knowledgeable in shipping regulations, are permitted to authorize shipments of radioactive material.

Protective transportation services such as signature security service or sealed shipping vehicles are required for these shipments to ensure point-to-point control and traceability of each shipment from shipper to receiver. A readily accessible log of all shipments in transit is maintained to enable prompt identification and provide the basis for advice on the nature of the shipment. Return receipts are required to be made in writing by receivers to ensure that radioactive material has not been lost in shipment. Receipt inspection of containers of radioactive material and accompanying documents are required promptly after receipt to monitor compliance. Even minor discrepancies from detailed shipping regulations are required to be reported to the shipper so that correction can be made in future shipments. This is done to ensure compliance with shipping regulations.

Radioactive materials shipped in the Naval Nuclear Propulsion Program include anticontamination clothing for laundry, small sealed sources used for calibrating radiation monitoring instruments, tools and equipment used for radioactive work, low-level radioactive waste, radioactive components and new and irradiated naval fuel. A total of approximately 1,000 shipments are made annually by Naval nuclear-powered ships and their support facilities, which is a small part of the more than two million shipments of radioactive materials made annually in the United States (reference 29).

Nearly all radioactive shipments in the Naval Nuclear Propulsion Program contain only low-level radioactivity classified under Department of Transportation regulations as low specific activity or limited quantity shipments. The predominant radionuclide associated with these shipments is cobalt 60 in the form of insoluble metallic oxide corrosion products attached to surfaces of materials inside shipping containers. Most low-level shipments are made by truck. Air transport is used occasionally in the Naval Nuclear Propulsion Program. These air shipments involve only very low-level radioactivity and are not shipped on passenger planes.

Approximately one quarter of the low-level radioactivity shipments are minute quantities in sealed instrument calibration check sources. These sources contain insignificant quantities of radioactivity which are comparable to the radioactivity in typical ionization type smoke detectors. Greater than one-half of these low-level shipments are anticontamination clothing, equipment and tools. The anticontamination laundry involves shipments of special outer clothing potentially contaminated with low levels of radioactivity while worn in controlled work areas. This laundry is shipped by Nuclear Regulatory Commission or agreement state licensed contractors to their facilities for cleaning. On the average, one shipment of low-level radioactive waste per month is made from each facility listed in Table 3.

The remaining few shipments are new and irradiated naval fuel and radioactive components associated with reactors and these are shipped by the Department of Energy. Such shipments are made infrequently since Naval nuclear-powered ships need refueling infrequently. Measures are carried out to assist in safeguarding these shipments and assuring they reach their destination. Each irradiated naval fuel shipment is escorted by U.S. Government representatives and each shipping container is specifically designed to withstand extreme accident impacts, fire, or water immersion, and to prevent release of the material to the environment in the event of an accident. The cargo in the nuclear fuel and radioactive component shipments is non-explosive and non-flammable and, in addition, the radioactive material in the radioactive components is in an insoluble form that should not be dispersed even in the event of an accident.

Irradiated naval fuel shipments have historically been made to the Department of Energy's Idaho National Engineering Laboratory (INEL) for reprocessing. In 1992, the Department of Energy decided to stop reprocessing irradiated fuel at INEL. Under the National Environmental Policy Act, the Department of Energy is preparing an Environmental Impact Statement (EIS) covering the management of irradiated fuel for which it is responsible, including fuel removed from naval reactors. The Navy is a cooperating agency in this effort. A draft EIS was published in June 1994 and the final EIS will be published in April 1995. Future irradiated naval fuel shipments are covered by this evaluation.

For purposes of this report, estimates of annual radiation exposure to transportation crews and the general public from shipments of radioactive materials in the Naval Nuclear Propulsion Program have been made in a manner consistent with that employed by the Nuclear Regulatory Commission in reference 29. Based on comparisons of the types and numbers of radioactive shipments made, the total annual radiation exposure to all transportation crews for all shipments is estimated to be less than three man-rem. If one person were to receive all this exposure, that person would not exceed the annual radiation exposure permitted for an individual worker by the Nuclear Regulatory Commission. The total estimated radiation exposure accumulated by the public along transportation routes is not more than a few times higher than the exposure to transportation workers. The maximum exposure to any individual member of the public would be far less than that received from natural radiation.

More detailed exposure estimates for irradiated naval fuel shipments are described in the EIS cited above and demonstrate that for over 600 container shipments made since 1957, the total population dose is less than two man-rem.

Shipments of radioactive materials associated with Naval nuclear propulsion plants have not resulted in any measurable release of radioactivity to the environment. There have never been any significant accidents involving release of radioactive material during shipment since the Naval Nuclear Propulsion Program began. In general, the few accidents that have occurred involved incidents such as broken truck axles or slight external damage to a shipping container with no release of radioactivity. In one incident a train collision resulted in minor denting of a new fuel shipping container with no loss of integrity of the container, no damage to the fuel and no release of radioactivity. In the only two instances that involved loss of contents, one quart containers holding samples with small amounts of radioactivity were broken in shipment. In one case this occurred when a cargo aircraft crashed. The other container was lost from a commercial ship. Both containers were recovered and there was no measurable radioactivity released since the original contents were less than one millionth of a curie.

The requirements of the Naval Nuclear Propulsion Program specify that the carriers for all radioactive material shipments shall have accident plans which identify the actions to be taken in the event the transportation vehicle is involved in an accident. These plans provide for notification of civil authorities and the originating facility. Also provided is a twenty-four hour telephone number at the originating facility for emergency guidance and assistance. The U.S. Navy would communicate with and cooperate fully with state radiological officials in the event of occurrences involving shipments of radioactive materials.

ENVIRONMENTAL MONITORING

To provide additional assurance that procedures used by the U.S. Navy to control radioactivity are adequate to protect the environment, the Navy conducts environmental monitoring in harbors frequented by its nuclear-powered ships. Environmental monitoring surveys for radioactivity are periodically performed in harbors where U.S. Naval nuclear-powered ships are built or overhauled and where these ships have home ports or operating bases. Samples from each harbor monitored are also checked at least annually by a U.S. Department of Energy laboratory to ensure analytical procedures are correct and standardized. The Department of Energy laboratory results have been consistent with shipyard results.

Navy Environmental Monitoring Program

The current Navy environmental monitoring program consists of analyzing samples of harbor sediment, water and marine life, supplemented by shoreline surveys, posted dosimeters and effluent monitoring. Sampling harbor sediment and water each quarter year is emphasized since these materials would be the most likely affected by releases of radioactivity.

As discussed earlier, cobalt 60 is the predominant radionuclide of environmental interest resulting from Naval nuclear reactor operations. Therefore, Navy monitoring procedures require collecting in each harbor approximately twenty to one hundred twenty sediment samples once each quarter year for analysis to detect cobalt 60 and other gamma emitting radionuclides. Locations and numbers of sediment samples for a particular harbor depend on the size of the harbor and the number and separation of locations where nuclear-powered ships berth. Sampling points are selected to form a pattern around ship berthing locations and to provide points in areas away from these berthing locations. The sampling locations are selected individually for each harbor considering characteristics of the harbor.

Sediment samples are collected using a dredge which samples a surface area of thirty-six square inches and has been modified to collect only the top one-half to one inch of sediment. The top layer was selected because it should be more mobile and more accessible to marine life than deeper layers. The samples are drained of excess water and placed directly into a Marinelli container for analysis. Each sediment sample is analyzed for gamma radioactivity in the container in which it is collected using a solid state germanium detector with a multichannel analyzer. The gamma data is analyzed specifically for the presence of cobalt 60. Results of the sediment samples from harbors monitored by the Navy in the U.S. and possessions are summarized in Table 4.

Table 4 shows that most harbors do not have detectable levels of cobalt 60. As reported in the past, low levels of cobalt 60, less than three millionths of a microcurie per gram, are detected around a few operating base and shipyard piers where nuclear-powered ship maintenance and overhauls were conducted in the early 1960's. These low levels are well below the naturally occurring radioactivity levels in the harbors. The radioactivity detected is from operations in the early 1960's since releases such as shown earlier in Table 1 are too small to be detectable in the harbors. A measure of the significance of these low levels is that if all of a person's food (reference 30) were to contain three millionths of a microcurie of cobalt 60 per gram, that person would receive less than ten percent of the dose from natural background radiation (see reference 18). Cobalt 60 is not detectable in general harbor bottom areas away from these piers.

Low levels of cesium 137 were detected in some sediment samples. The cesium 137 detected is not related to Naval nuclear reactor operations because the high integrity Naval fuel retains fission products. The cesium 137 concentrations measured in the sediment are due to world wide dispersion from weapons testing.

For comparison, references 31 and 32 contain evaluations by laboratories of the Environmental Protection Agency and of the Department of Energy of the effects on the environment from the accumulation of radionuclides near points of discharge from several nuclear facilities. The referenced reports conclude that radioactivity levels much greater than shown in Table 4 for Naval Nuclear Propulsion Program facilities have caused no significant radiation exposure to the general public.

TABLE 4 SUMMARY OF 1994 SURVEYS FOR COBALT 60 IN BOTTOM SEDIMENT OF U.S. HARBORS WHERE U.S. NAVAL NUCLEAR-POWERED SHIPS HAVE BEEN REGULARLY BASED, OVERHAULED OR BUILT

	Range of Cobalt 60 Analytical Results	Number of Samples With Cobalt 60 Less Than	Number of Samples With Cobalt 60 Greater Than	Total Bottom Area With Cobalt 60 Over $3x10^{-6}$uCi/gm
FACILITY	(10^{-6}uCi/gm)	$3x10^{-6}$uCi/gm	$3x10^{-6}$uCi/gm	(Square Kilometers)
Kittery, Maine Portsmouth Naval Shipyard	<0.03 - <0.11	120	0	0
Groton, New London, Conn. Electric Boat Division, State Pier and Sub Base	<0.05 - <0.24	400	0	0
Newport News, Virginia Newport News Shipbuilding	<0.02 - <0.15	188	0	0
Norfolk, Virginia Naval Shipyard and Base	<0.03 - <0.16	280	0	0
Charleston, South Carolina Naval Shipyard, Naval Nuclear Power Training Unit, and Bases	<0.02 - <0.15	322	0	0
Kings Bay, Georgia	<0.02 - <0.12	100	0	0
San Diego, California Navy Piers	<0.02 - <0.16	252	0	0
Vallejo, California Mare Island Naval Shipyard	<0.02 - <0.22	228	0	0
Bremerton, Washington Naval Shipyard and Base	<0.01 - 0.17	302	0	0
Pearl Harbor, Hawaii Naval Shipyard and Sub Base	<0.02 - 0.21	204	0	0
Apra Harbor, Guam	<0.01 - <0.09	128	0	0
Port Canaveral, Florida	<0.02 - <0.11	80	0	0

NOTES:

(1) The "<" symbol indicates no cobalt 60 was detected in the sample. The number given is the minimum detectable activity (MDA) i.e., the concentration at which cobalt 60 could be detected if it were present. The MDA varies from sample to sample and location to location due to statistical fluctuations.

(2) uCi/gm = microcurie per gram. 1 uCi = $1x10^{-6}$curie (Ci).

(3) One square kilometer is approximately 0.4 square mile. Estimated total cobalt 60 in the top layer of sediment is 0.01 Ci. Samples from more than one foot deep from several harbors show that total cobalt 60 present may be two to five times that measured in the surface layer.

The maximum total radioactivity observed in a U.S. harbor is less than 0.05 curie of cobalt 60. This radioactivity is small compared to background. Based on the typical concentrations of naturally occurring radioactivity such as potassium 40, radium, uranium and thorium which are described in reference 16 for marine sediment, the natural radioactivity in the sediment of a typical harbor amounts to hundreds of curies.

In addition to Navy analysis of environmental samples, at least ten sediment samples from each harbor monitored have been sent each year to a Department of Energy laboratory, as a check of Navy results. This Department of Energy laboratory provides a further check on the quality of environmental sample analyses by participating in the quality control programs sponsored by the Department of Energy and the Environmental Protection Agency.

The check samples were analyzed for gamma radionuclides in a manner similar to Navy procedures but with greater sensitivity. Figure 3 depicts the gamma spectra for two such samples. Both spectra show the presence of abundant naturally occurring radionuclides which contribute to measured radioactivity even if cobalt 60 were not present. The upper spectrum is for a sample to which cobalt 60 has been added to achieve a concentration of approximately three millionths of a microcurie per gram and shows easily recognizable energy peaks due to the presence of this small concentration of cobalt 60. The lower spectrum is typical of most of the sediment samples with no detectable cobalt 60.

At least five water samples are taken in each harbor once each quarter year in areas where nuclear-powered ships berth and from upstream and downstream locations. These samples are analyzed for gamma radioactivity, including cobalt 60. A solid state germanium detector with a multichannel analyzer is used to measure gamma radioactivity and detect the presence of cobalt 60. Procedures for analysis will detect cobalt 60 if its concentration exceeds the Environmental Protection Agency drinking water limits of reference 14. No cobalt 60 has been detected in any of the water samples from all harbors monitored.

An Environmental Protection Agency evaluation in reference 33 shows that the cobalt 60 from Naval nuclear propulsion plants is in the form of metallic corrosion product particles which do not appear to be concentrated in the food chain. However, samples of marine life such as mollusks, crustaceans and marine plants have been collected from all harbors monitored. Marine life samples are also analyzed using a germanium detector with a multi-channel analyzer. The results of the marine life samples from harbors monitored by the Navy in the U.S. and possessions are summarized in Table 5. Table 5 demonstrates that no buildup of cobalt 60 associated with U.S. Naval nuclear-powered ships has been detected in these samples of marine life.

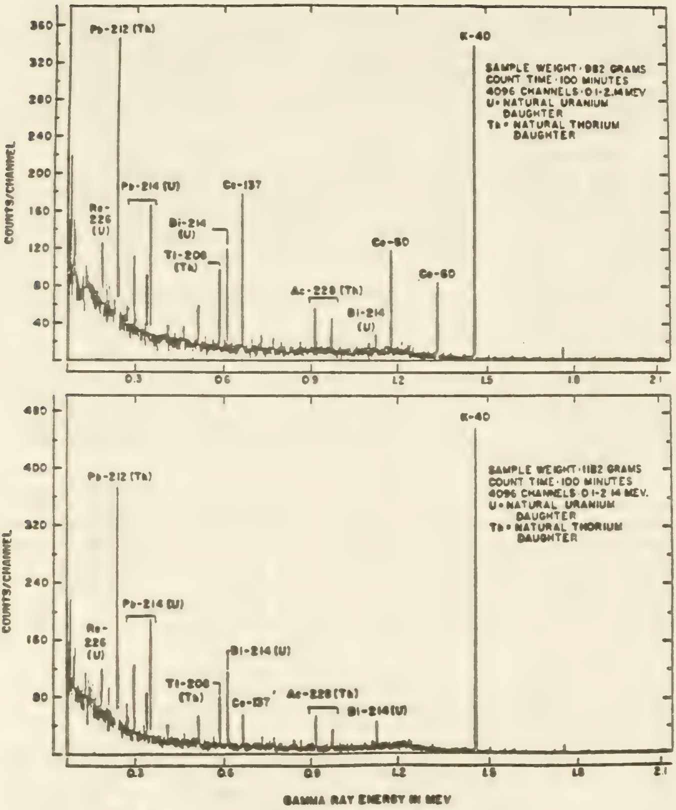


FIGURE 3
GAMMA SPECTRA OF HARBOR BOTTOM SEDIMENT
SAMPLES WITH A GERMANIUM DETECTOR

TABLE 5 SUMMARY OF 1994 SURVEYS FOR COBALT 60 IN MARINE LIFE OF U.S. HARBORS WHERE U.S. NAVAL NUCLEAR-POWERED SHIPS HAVE BEEN REGULARLY BASED, OVERHAULED OR BUILT

FACILITY	Mollusks Cobalt 60 Analytical Results (10^{-6}uCi/gm)	Crustaceans Cobalt 60 Analytical Results (10^{-6}uCi/gm)	Marine Plants Cobalt 60 Analytical Results (10^{-6}uCi/gm)
Kittery, Maine Portsmouth Naval Shipyard	<0.07	<0.03	<0.10
Groton, New London, Conn. Electric Boat Division, State Pier and Sub Base	<0.05	<0.06	<0.09
Newport News, Virginia Newport News Shipbuilding	<0.08	<0.09	<0.05
Norfolk, Virginia Naval Shipyard and Base	<0.03	<0.05	<0.05
Charleston, South Carolina Naval Shipyard, Naval Nuclear Power Training Unit, and Bases	<0.04	<0.04	N/A
Kings Bay, Georgia	<0.02	<0.01	<0.02
San Diego, California Navy Piers	<0.01	<0.01	<0.01
Vallejo, California Mare Island Naval Shipyard	<0.09	<0.09	<0.19
Bremerton, Washington Naval Shipyard and Base	<0.08	<0.06	<0.12
Pearl Harbor, Hawaii Naval Shipyard and Sub Base	N/A	<0.05	<0.09
Apra Harbor, Guam	<0.01	<0.01	<0.01
Port Canaveral, Florida	<0.02	<0.01	<0.01

NOTES:

(1) The "<" symbol indicates no cobalt 60 was detected in the sample. The number given is the minimum detectable activity (MDA) i.e., the concentration at which cobalt 60 could be detected if it were present. The MDA varies from sample to sample and location to location due to statistical fluctuations.

(2) uCi/gm = microcurie per gram. 1 uCi = 1×10^{-6}curie (Ci).

(3) N/A = Not Available. Samples of marine life from this location were not available for collection.

In all monitored harbors, twice per year shoreline areas uncovered at low tide are surveyed for radiation levels with sensitive scintillation detectors to determine if any radioactivity from bottom sediment washed ashore. All results were the same as background radiation levels in these regions, approximately 0.01 millirem per hour. Thus, there is no evidence in these ports that these areas are being affected by nuclear-powered ship operations.

Ambient radiation levels are measured using sensitive thermoluminescent dosimeters continuously posted at locations outside the boundaries of areas where radiological work is performed. These dosimeters are also posted at locations remote from support facilities to measure background radiation levels from natural radioactivity. The results of dosimeters posted at support facilities between radiologically controlled areas and the general public and dosimeters posted at remote background locations up to several miles away are compared in Table 6. The range of dosimeter readings is also given since natural background radiation levels vary from location to location primarily due to the concentration of radionuclides in the soil (reference 18). The results of Table 6 show that Naval Nuclear Propulsion Program activities had no distinguishable effect on normal background radiation levels at the site perimeter.

Naval nuclear reactors and their support facilities are designed to ensure there are no significant discharges of radioactivity in airborne exhausts. Radiological controls are exercised in support facilities to preclude exposure of working personnel to airborne radioactivity exceeding one-tenth of the limits specified in reference 6. These controls, discussed in reference 26, include containment for radioactive materials and provide a barrier to prevent significant radioactivity from becoming airborne. Further, all air exhausted from these facilities is passed through high efficiency particulate air filters and monitored during discharge. Comparison of sensitive airborne radioactivity measurements in shipyards demonstrates that air exhausted from facilities actually contained a smaller amount of radioactivity than this same air contained when it was drawn from the environment into the facilities. There were no discharges of airborne radioactivity from these facilities above concentrations normally present in the atmosphere.

TABLE 6 SUMMARY OF 1994 OFF-SITE AND PERIMETER RADIATION MONITORING OF U.S. HARBORS WHERE U.S. NAVAL NUCLEAR-POWERED SHIPS HAVE BEEN REGULARLY BASED, OVERHAULED OR BUILT

FACILITY	Average Off-Site Dosimeter (mrem/qtr)	Range of Off-site Dosimeter (mrem/qtr)	Average Perimeter Dosimeter (mrem/qtr)	Range of Perimeter Dosimeter (mrem/qtr)
Kittery, Maine Portsmouth Naval Shipyard	19	15 - 23	19	15 - 22
Groton, New London, Conn. Electric Boat Division, State Pier and Sub Base	27	17 - 40	24	14 - 40
Newport News, Virginia Newport News Shipbuilding	13	11 - 16	14	10 - 18
Norfolk, Virginia Naval Shipyard and Base	26	19 - 31	18	11 - 31
Charleston, South Carolina Naval Shipyard, Naval Nuclear Power Training Unit, and Bases	23	17 - 29	21	11 - 30
Kings Bay, Georgia	19	13 - 26	21	15 - 30
San Diego, California Navy Piers	23	17 - 28	22	12 - 58
Vallejo, California Mare Island Naval Shipyard	17	11 - 23	17	10 - 30
Bremerton, Washington Naval Shipyard and Base	15	12 - 18	15	12 - 20
Pearl Harbor, Hawaii Naval Shipyard and Sub Base	15	12 - 18	15	12 - 18
Apra Harbor, Guam	17	13 - 21	15	10 - 23
Port Canaveral, Florida	19	12 - 26	21	15 - 27

NOTE:

(1) mrem/qtr = millirem per quarter year. 1 mrem = 1×10^{-3}rem.

ENVIRONMENTAL PATHWAYS ANALYSIS

Results of monitoring of environmental samples described above have shown that environmental radioactivity levels have not been changed appreciably and therefore radiation exposure to the public from operations of nuclear powered ships and their support facilities is too low to measure. Nevertheless, an analysis has been performed to provide a quantitative estimate of the radiation exposure to which any member of the general public might be exposed as a result of radioactivity in liquid and airborne effluents.

For airborne effluents, the Environmental Protection Agency COMPLY computer program is used for this analysis, as required by EPA regulations in reference 34. Site specific input parameters include radionuclide releases, distance to members of the public, wind speed and direction, and food production. The releases of airborne effluents used in the analysis are summarized in Table 7. Cobalt 60 values include actual measurements of cobalt 60 emissions from the exhaust of Navy facilities in addition to very conservative estimates of other potential sources of cobalt 60. Values for other airborne radionuclides, including iodine 131, are conservative estimates based upon detailed study of land based naval nuclear propulsion prototype plants. For example, the release of tritium (in the form of water vapor) is based upon the very conservative assumption that half of the radioactive water handled by a large shipyard evaporates from collection and storage tanks. Thus, the actual exposures to members of the public are expected to be lower than the results of this analysis.

Results of the airborne effluent analysis are summarized in Table 8. Table 8 compares the estimated maximum exposure to a member of the public from Program effluents with guidelines of the Nuclear Regulatory Commission in reference 13. These numerical guidelines on calculated radiation exposures implement the concept that radioactivity in effluents from light water nuclear electric power reactors should be limited to amounts and quantities as low as reasonably achievable. Although these guidelines are not applicable to nuclear-powered ships and their support facilities they provide a context in which to judge the significance of radiation exposures from Program effluents. The estimated maximum radiation exposure to a member of the general public from releases of airborne radioactivity is also much less than the standard of 10 millirem per year established by the Environmental Protection Agency in reference 34.

TABLE 7 RADIONUCLIDE RELEASES USED FOR ENVIRONMENTAL PATHWAYS ANALYSIS

Radionuclide	Annual Airborne Release, Curie
Cobalt 60*	<0.0004
Tritium	1.0
Carbon 14	0.10
Krypton 83m	0.00075
Krypton 85m	0.0039
Krypton 85	0.000013
Krypton 87	0.0019
Krypton 88	0.0054
Xenon 131m	0.00068
Xenon 133m	0.0037
Xenon 133	0.11
Xenon 135	0.071
Argon 41	0.20
Iodine 131*	<0.00008

* Site specific values are used for these radionuclides. The tabulated values bound the site specific values used in the analysis.

For liquid effluents, the results of the environmental monitoring samples demonstrate that there is no significant radiation exposure to members of the public without the need for any detailed theoretical model calculations. For example, the samples of marine life obtained from the immediate vicinity of shipyard piers and drydocks did not have any detectable cobalt 60, even with sensitive analysis. Even if cobalt 60 were assumed to be present at concentrations just below the limits of detection shown in Table 5 and a person were to eat 40 pounds per year of mollusks and crustaceans caught directly from these areas, the person would receive much less than one millirem per year. Similarly, even though the Navy minimizes releases of radioactive liquids and there has never been any detectable cobalt 60 in harbor water, the water consumption pathway cannot result in any dose to the public since seawater is not used for drinking water consumption in the vicinity of these facilities. Thus, exposures to members of the public from the Naval Nuclear Propulsion Program liquid effluents are far less than the guidelines of the Nuclear Regulatory Commission which are listed in Table 8.

TABLE 8 ESTIMATED MAXIMUM RADIATION EXPOSURE TO AN INDIVIDUAL FOR ASSUMED LIQUID AND AIRBORNE RADIOACTIVITY RELEASES FROM SHIPYARDS ENGAGED IN NAVAL NUCLEAR PROPULSION WORK

	Maximum Exposure To An Individual	
	NRC Guideline millirem/year	Estimated Value millirem/year
From Radionuclides In Liquid Releases	3 whole body, or 10 any organ	less than 1
From Gaseous Radionuclides In Airborne Releases	5 whole body, or 15 skin	less than 0.1
From Other Radionuclides In Airborne Releases	15 any organ	less than 0.1

	Maximum Exposure To An Individual	
	EPA Regulation millirem/year	Estimated Value millirem/year
From Radioiodine In Airborne Releases	3	less than 0.03
From Other Radionuclides In Airborne Releases	10	less than 0.1

AUDITS AND REVIEWS

The requirements and procedures for control of radioactivity is an important part of the training programs for everyone involved with radioactivity in the Naval Nuclear Propulsion Program. Such training is part of the initial qualification of shipyard workers and of Naval personnel assigned to ships and bases, and is required to be repeated regularly. Emphasis on this training is part of the concept that radiological control personnel alone cannot cause radiological work to be well performed; production and operations personnel and all levels of management are required to be involved in the control of radioactivity.

Checks and balances of several kinds are also set up to help ensure control of radioactivity. First, written procedures exist which require verbatim compliance. Radiological control personnel monitor various steps in radioactive waste processing. In each shipyard an independent organization, separate from the radiological control organization, audits all aspects of radioactive waste processing. Audits are performed by representatives from Naval Reactors headquarters who are assigned full time at each shipyard. Radiological control personnel from headquarters also conduct periodic inspections of each shipyard. In addition, shipyards have made detailed assessments of the environmental effects of shipyard operations and have published reports on the results of these assessments. Similarly, there are multiple levels of audits and inspections for the other Navy shore facilities, tenders, and nuclear-powered ships and for other radiologically controlled functions such as transportation. Even the smallest audit findings are followed up to ensure proper recovery and permanent corrective actions are taken and to help minimize the potential for future deficiencies.

The policy of the Navy is to provide for close cooperation and effective communication with state radiological officials involving occurrences that might cause concern because of radiological effects outside the ships or shore facilities. The Navy has reviewed radioactive waste disposal, radiological environmental monitoring, transportation and other radiological matters with state radiological officials in the states where Navy nuclear-powered ships are based or overhauled. Although there were no occurrences in 1994 which resulted in radiological effects to the public outside these facilities, states were notified when inquiries showed public interest in the possibility that such events had occurred. The Navy has encouraged states to conduct independent radiological environmental monitoring in harbors where Naval nuclear-powered ships are based or overhauled; the results of monitoring by states have been consistent with Navy results.

The U.S. Environmental Protection Agency has conducted detailed reviews of the Navy's procedures for controlling radioactive waste and for radiological environmental monitoring. An Environmental Protection Agency laboratory has conducted detailed environmental surveys of selected U.S. harbors (references 28 and 35 through 43). This laboratory has performed these surveys in the harbors at Pascagoula, Mississippi; Charleston, South Carolina; Pearl Harbor, Hawaii; San Diego, Alameda, San Francisco and Vallejo, California; New London and Groton, Connecticut; Newport News, Portsmouth and Norfolk, Virginia; Kings Bay, Georgia; Kittery, Maine-Portsmouth, New Hampshire; and Bremerton and Bangor, Washington. Environmental Protection Agency results have been consistent with Navy results. The Environmental Protection Agency reports have concluded that operation of Naval nuclear-powered ships has had no adverse impact on public safety or health.

CONCLUSIONS

1. The total long-lived gamma radioactivity in liquids released into all ports and harbors from the U.S. Naval Nuclear Propulsion Program was less than 0.002 curie in 1994.

2. No increase of radioactivity above normal background levels has been detected in harbor water where U.S. Naval nuclear-powered ships are based, overhauled, or constructed.

3. Liquid releases from U.S. Naval nuclear-powered ships and their support facilities have not caused a measurable increase in the general background radioactivity of the environment.

4. Low level cobalt 60 radioactivity in harbor bottom sediment is detectable around a few operating base and shipyard piers from low level liquid releases in the 1960's. Concentrations of cobalt 60 are less than the concentrations of naturally occurring radionuclides around these piers. Cobalt 60 is not detectable in general harbor bottom areas away from these piers. The maximum total radioactivity observed in a U.S. harbor, less than 0.05 curie of cobalt 60, is small compared to the naturally occurring radioactivity. Comparison to previous environmental data summarized in references 1 through 5 shows that these environmental cobalt 60 levels are continuing to decrease.

5. Conservative estimates of radiation exposures to members of the public from the Naval Nuclear Propulsion Program are far less than either the U.S. Environmental Protection Agency environmental standards, the guidelines of the U.S. Nuclear Regulatory Commission or the exposure from natural background radioactivity.

6. Procedures used by the Navy to control releases of radioactivity from U.S. Naval nuclear-powered ships and their support facilities have been effective in protecting the environment and the health and safety of the general public. Independent radiological environmental monitoring performed by the U.S. Environmental Protection Agency and states have confirmed the adequacy of these procedures. These procedures have ensured that no member of the general public has received measurable radiation exposure as a result of current operations of the Naval Nuclear Propulsion Program.

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APPENDIX

ENVIRONMENTAL MONITORING SURVEY CHARTS

Environmental monitoring survey charts for harbors monitored for radioactivity associated with U.S. Naval nuclear-powered ships in the U.S. and possessions are listed below and included in this Appendix. The sampling locations for harbor water and harbor sediment are shown. In addition, shoreline survey areas and the locations of posted dosimetry devices are shown on the figures.

Figure No.	Location
	California
1	U.S. Naval Air Station, Alameda
2	Hunters Point Shipyard, San Francisco
3	Mare Island Naval Shipyard, Vallejo
4	San Diego Harbor
5	San Diego Harbor, Ballast Point Area
	Connecticut
6	Electric Boat Division, Groton
7	U.S. Naval Submarine Support Facility, New London Harbor
8	State Pier Area, New London
	Florida
9	Port Canaveral
	Georgia
10	U.S. Naval Submarine Base, Kings Bay
	Guam
11	Apra Harbor
	Hawaii
12	Pearl Harbor Area
13	Pearl Harbor Naval Shipyard
14	U.S. Naval Submarine Base, Pearl Harbor
	New Hampshire/Maine
15	Portsmouth Naval Shipyard
	South Carolina
16	U.S. Naval Station and Naval Shipyard, Charleston
17	U.S. Naval Weapons Station, Charleston

Virginia

18 Newport News Shipbuilding, Newport News
19 Norfolk Naval Shipyard, Portsmouth
20 U.S. Naval Station Norfolk
21 Norfolk--Portsmouth Virginia Area

Washington

22 Puget Sound Naval Shipyard
23 Bangor/Hood Canal

FIGURE 1
ENVIRONMENTAL MONITORING LOCATIONS AT
U.S. NAVAL AIR STATION ALAMEDA, CA

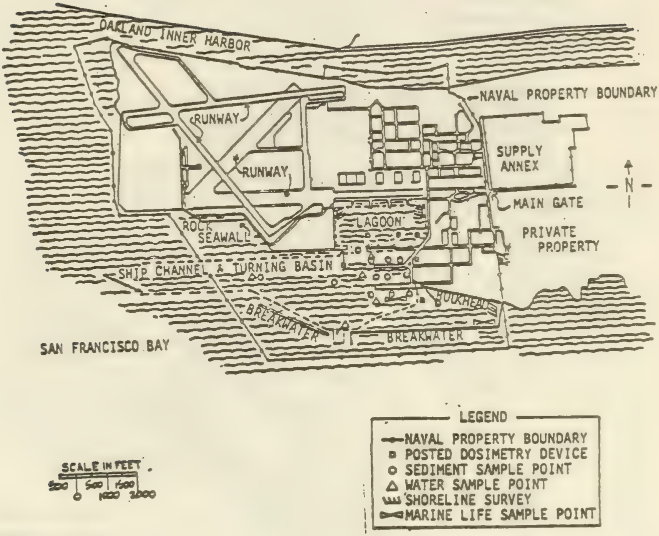


FIGURE 2
ENVIRONMENTAL MONITORING LOCATIONS AT
HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA

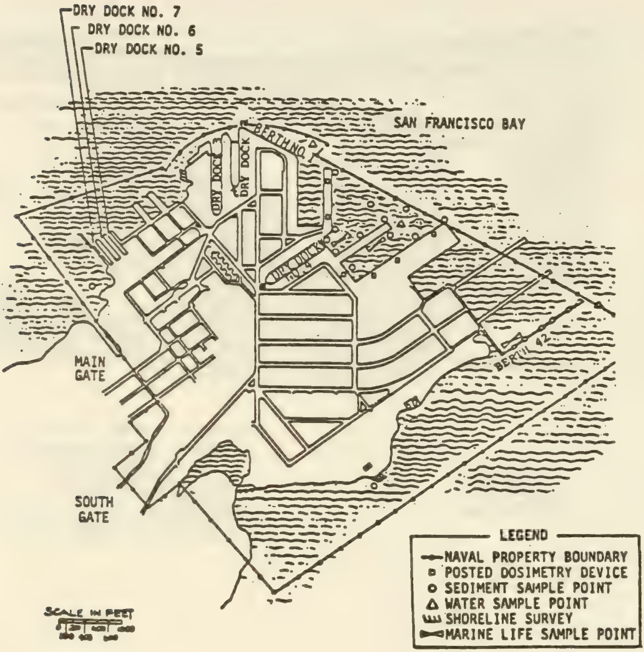


FIGURE 3
ENVIRONMENTAL MONITORING LOCATIONS AT
MARE ISLAND NAVAL SHIPYARD, VALLEJO, CA

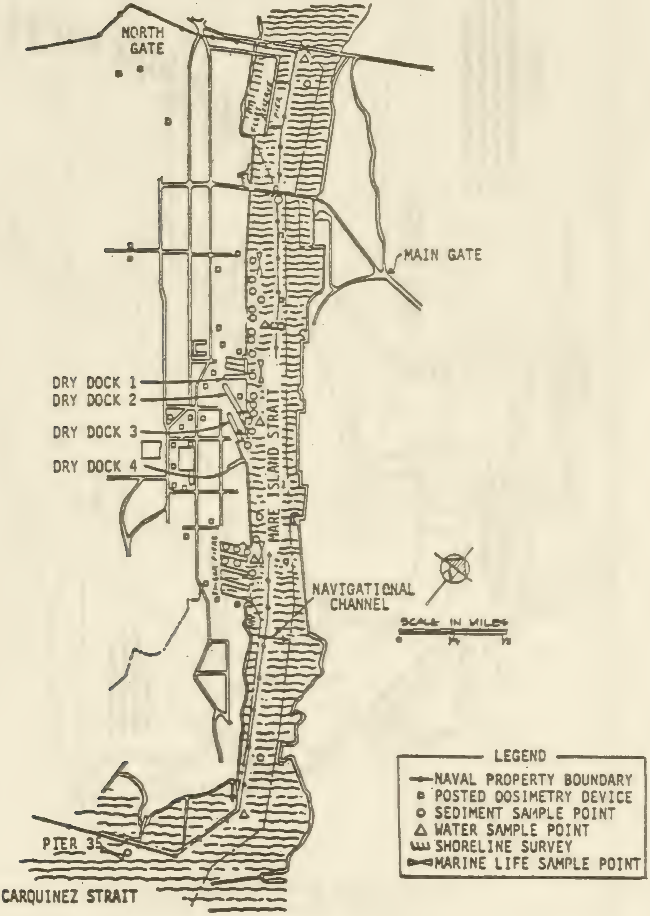
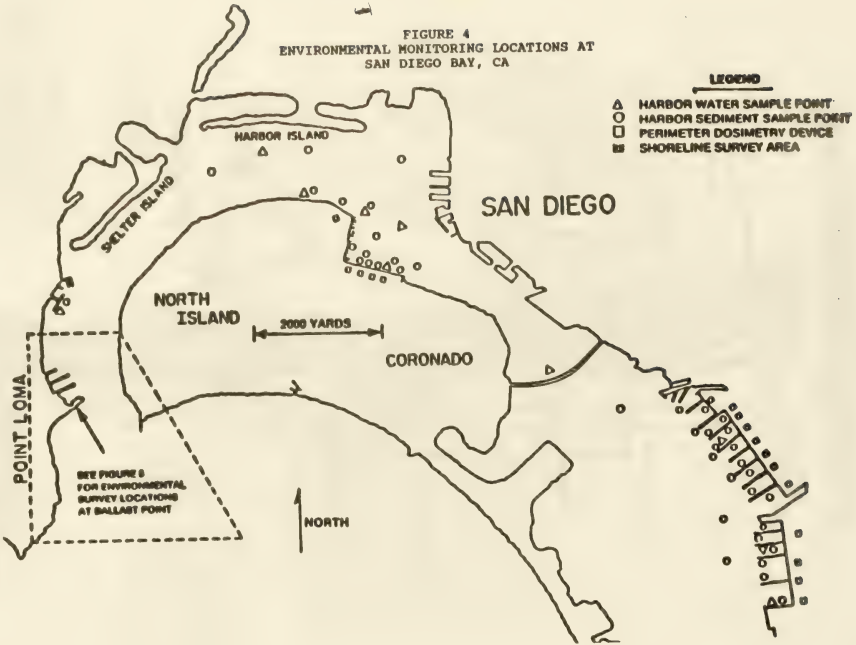


FIGURE 4
ENVIRONMENTAL MONITORING LOCATIONS AT
SAN DIEGO BAY, CA


LEGEND
△ HARBOR WATER SAMPLE POINT
○ HARBOR SEDIMENT SAMPLE POINT
□ PERIMETER DOSIMETRY DEVICE
▨ SHORELINE SURVEY AREA
HARBOR ISLAND
SHELTER ISLAND
SAN DIEGO
NORTH ISLAND
2000 YARDS
CORONADO
POINT LOMA
SEE FIGURE 5 FOR ENVIRONMENTAL SURVEY LOCATIONS AT BALLAST POINT
NORTH

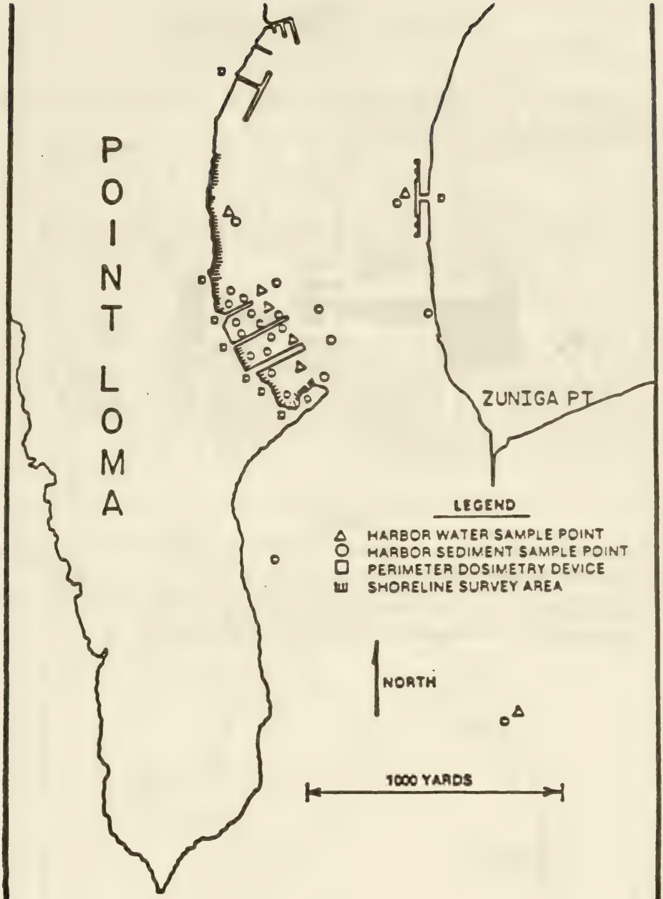
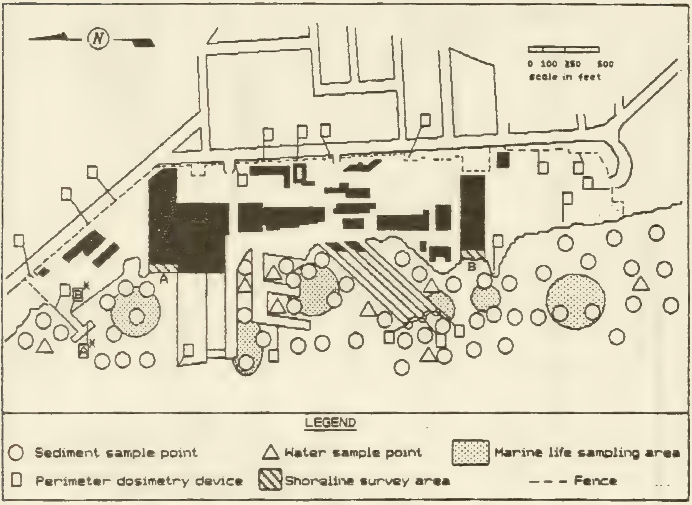

POINT LOMA
ZUNIGA PT
LEGEND
△ HARBOR WATER SAMPLE POINT
○ HARBOR SEDIMENT SAMPLE POINT
□ PERIMETER DOSIMETRY DEVICE
ш SHORELINE SURVEY AREA
NORTH
1000 YARDS

FIGURE 5
ENVIRONMENTAL MONITORING LOCATIONS AT
SAN DIEGO BAY - BALLAST POINT, CA

FIGURE 6
ENVIRONMENTAL MONITORING LOCATIONS AT
GENERAL DYNAMICS/ELECTRIC BOAT DIVISION SHIPYARD, GROTON, CT



* Location A was posted for the first and second quarters of 1994.

* Location B was posted for the third and fourth quarters of 1994.

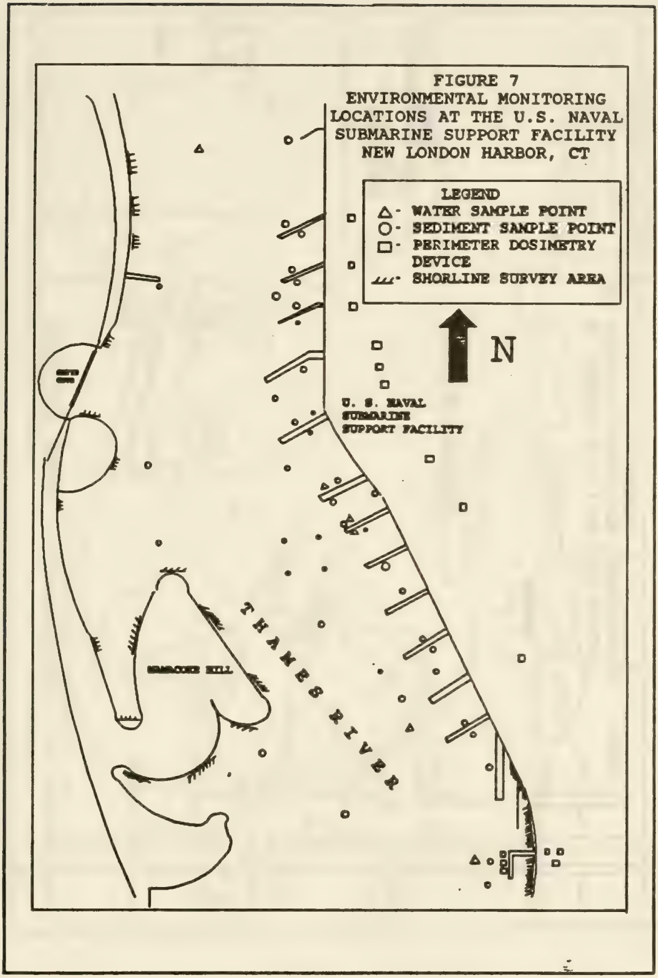


FIGURE 7
ENVIRONMENTAL MONITORING LOCATIONS AT THE U.S. NAVAL SUBMARINE SUPPORT FACILITY NEW LONDON HARBOR, CT

LEGEND
△ - WATER SAMPLE POINT
○ - SEDIMENT SAMPLE POINT
□ - PERIMETER DOSIMETRY DEVICE
ılı - SHORLINE SURVEY AREA
N
U. S. NAVAL SUBMARINE SUPPORT FACILITY
THAMES RIVER
MAMACOKE HILL

FIGURE 8
ENVIRONMENTAL MONITORING LOCATIONS AT
STATE PIER AREA, NEW LONDON, CT

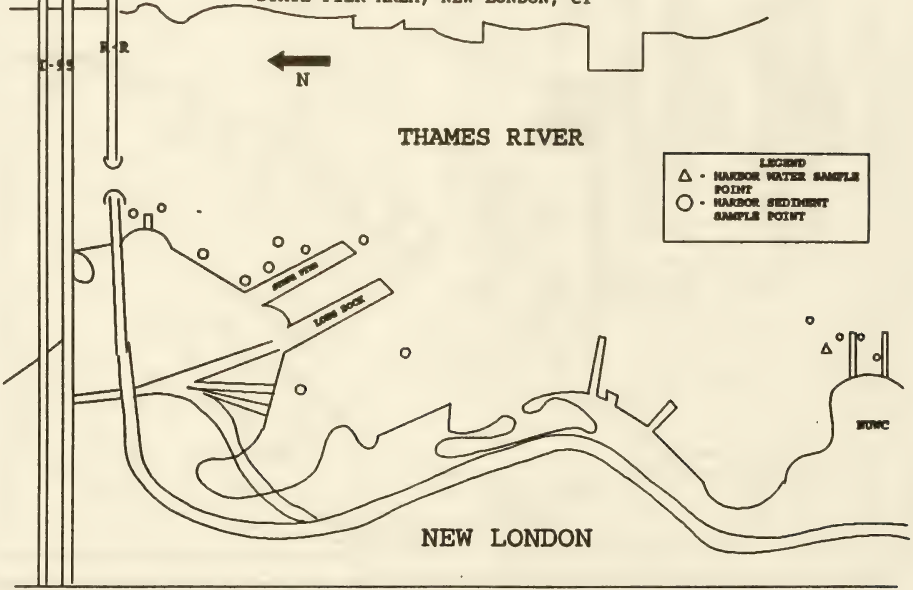


FIGURE 9
ENVIRONMENTAL MONITORING LOCATIONS AT
PORT CANAVERAL, FL

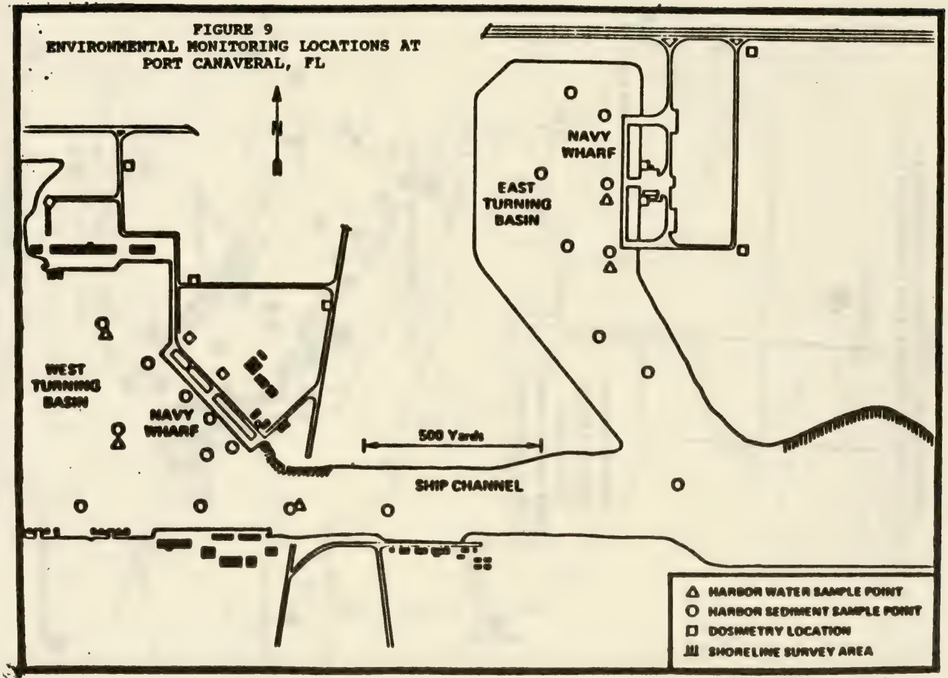
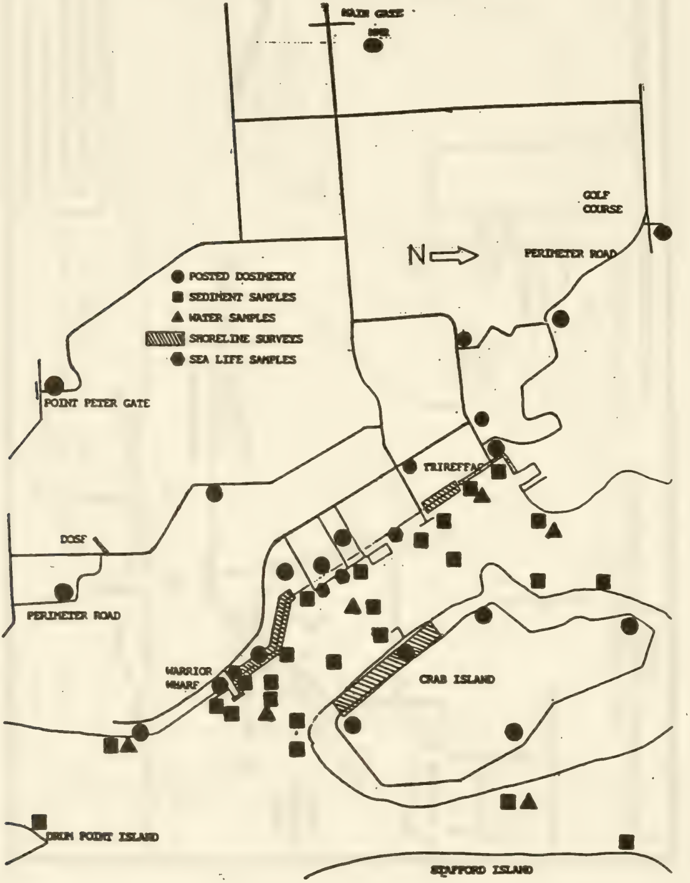


FIGURE 10
ENVIRONMENTAL MONITORING LOCATIONS AT
U.S. NAVAL SUBMARINE BASE, KINGS BAY, GA



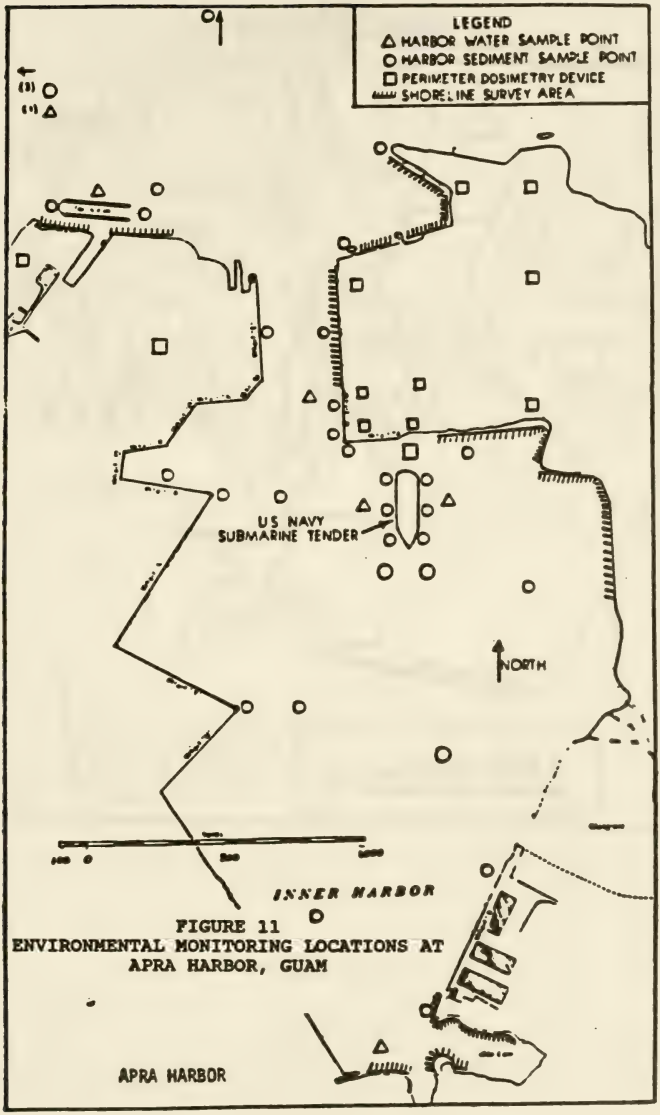

LEGEND
△ HARBOR WATER SAMPLE POINT
○ HARBOR SEDIMENT SAMPLE POINT
□ PERIMETER DOSIMETRY DEVICE
SHORELINE SURVEY AREA
(3)
(1)
US NAVY
SUBMARINE TENDER
NORTH
INNER HARBOR
APRA HARBOR

FIGURE 11
ENVIRONMENTAL MONITORING LOCATIONS AT
APRA HARBOR, GUAM

FIGURE 12
ENVIRONMENTAL MONITORING LOCATIONS AT
PEARL HARBOR AREAS, HI

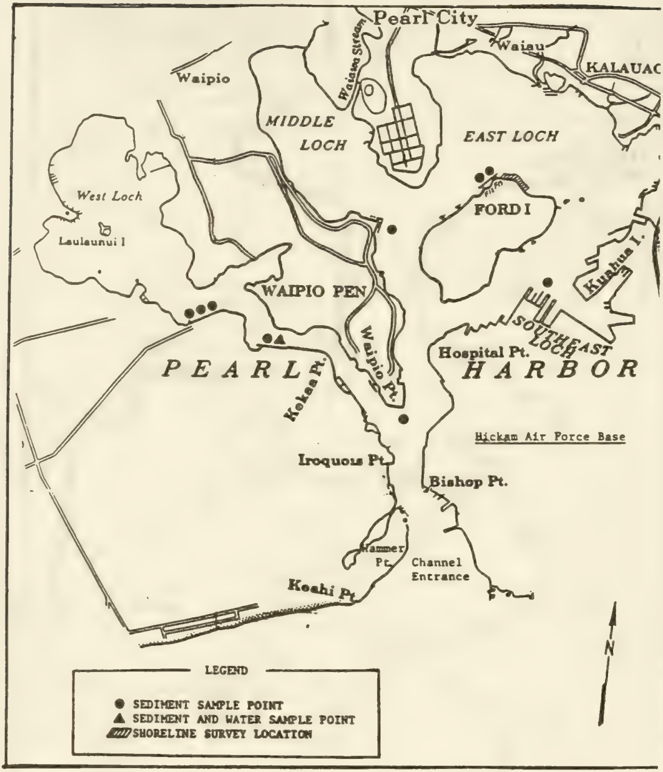
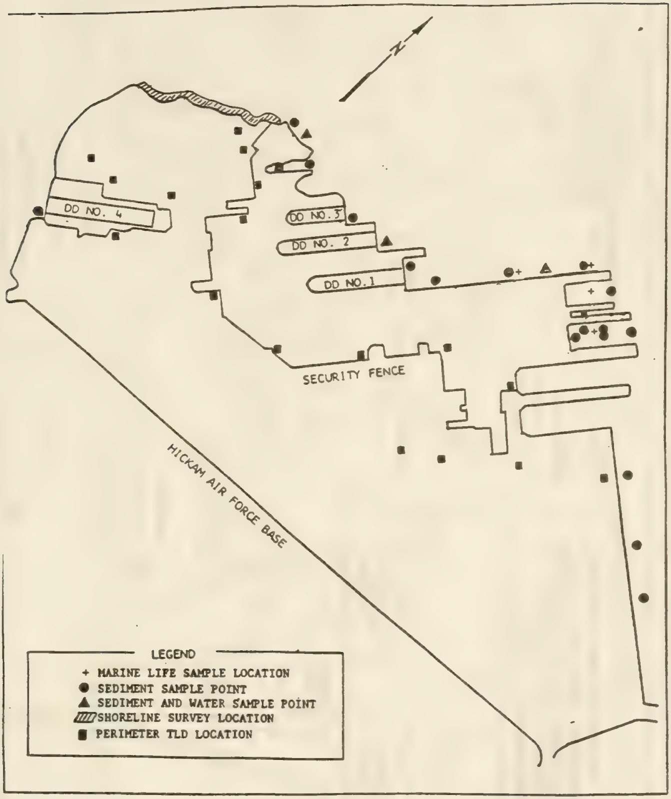


FIGURE 13
ENVIRONMENTAL MONITORING LOCATIONS AT
PEARL HARBOR NAVAL SHIPYARD, PEARL HARBOR, HI



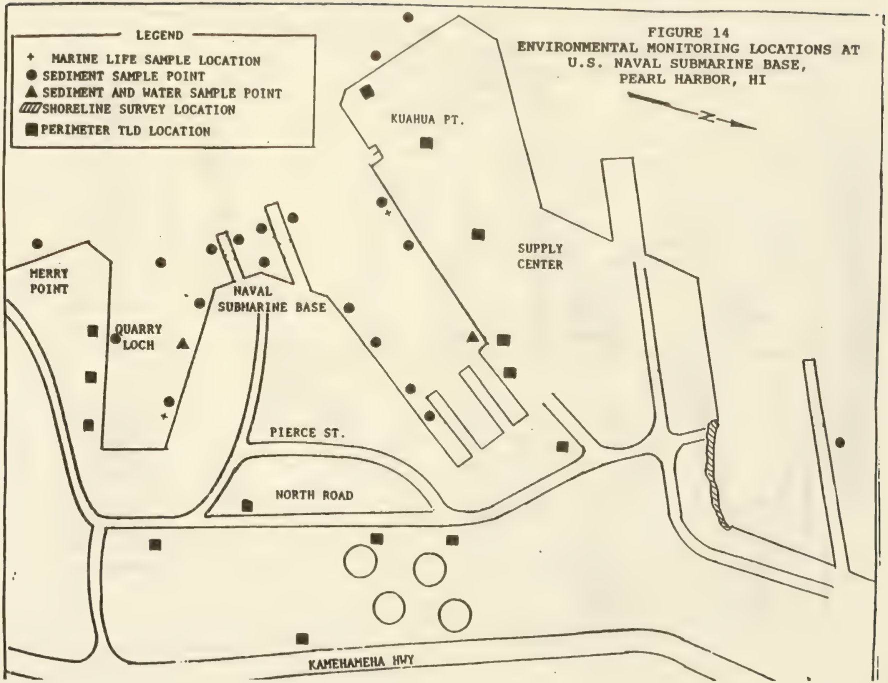


FIGURE 14
ENVIRONMENTAL MONITORING LOCATIONS AT
U.S. NAVAL SUBMARINE BASE,
PEARL HARBOR, HI

FIGURE 15
ENVIRONMENTAL MONITORING LOCATIONS AT
PORTSMOUTH NAVAL SHIPYARD, KITTERY, ME/PORTSMOUTH, NH

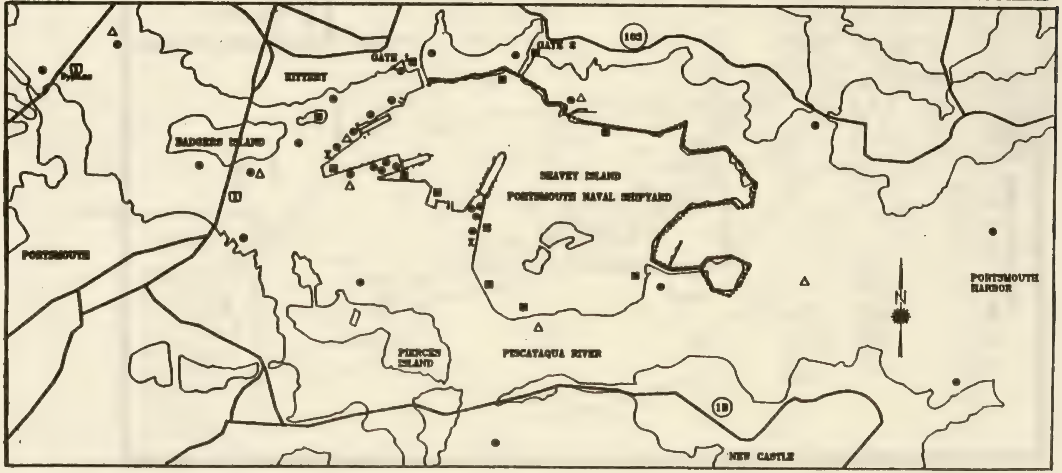


FIGURE 16
ENVIRONMENTAL MONITORING LOCATIONS AT
U.S. NAVAL BASE AND NAVAL SHIPYARD, CHARLESTON, SC

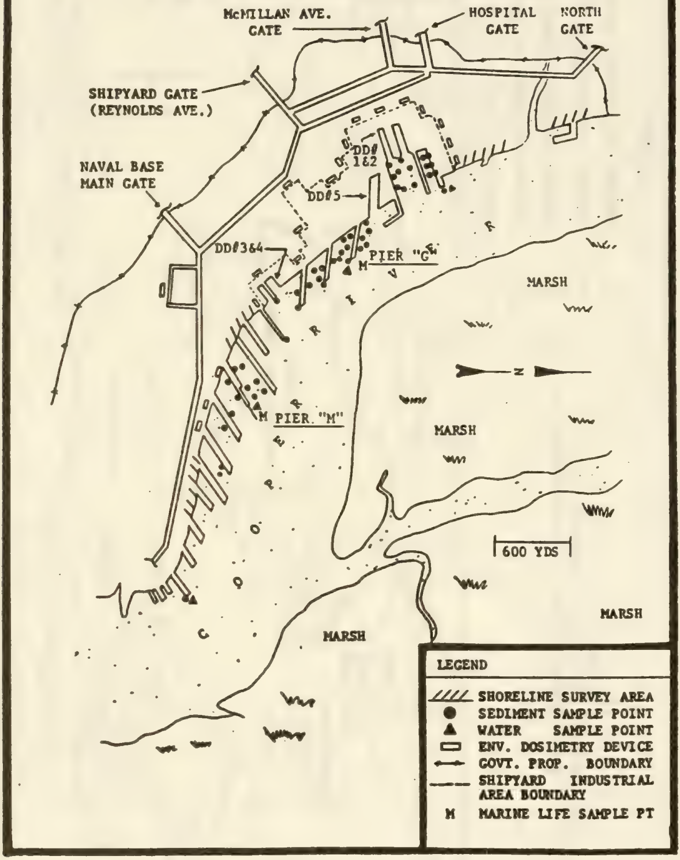


FIGURE 17
ENVIRONMENTAL MONITORING LOCATIONS AT
U.S. NAVAL WEAPONS STATION, CHARLESTON, SC

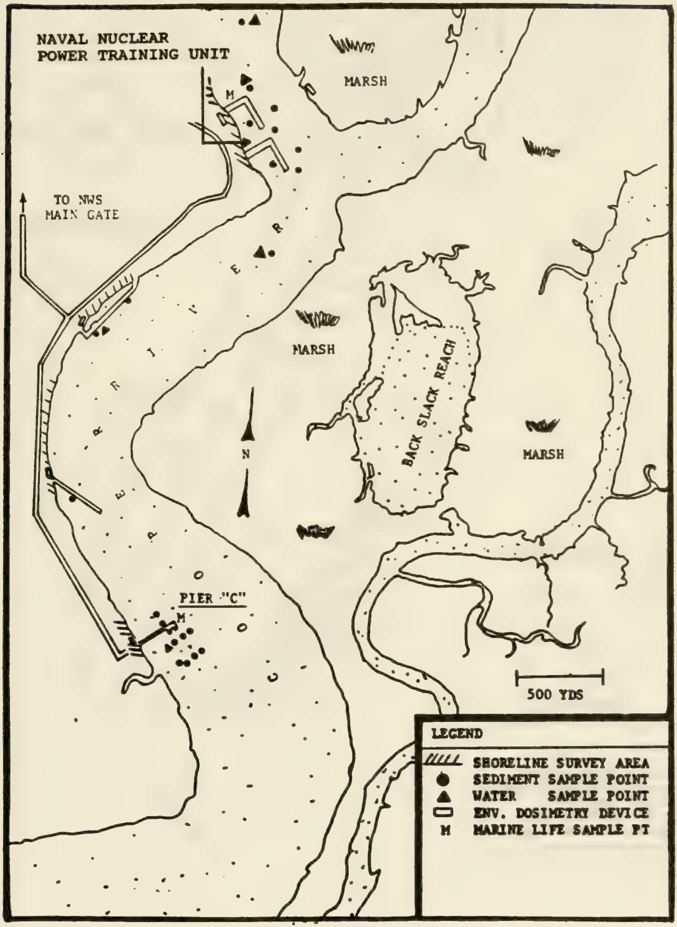


FIGURE 18
ENVIRONMENTAL MONITORING LOCATIONS AT
NEWPORT NEWS SHIPBUILDING AND DRY DOCK COMPANY, NEWPORT NEWS, VA

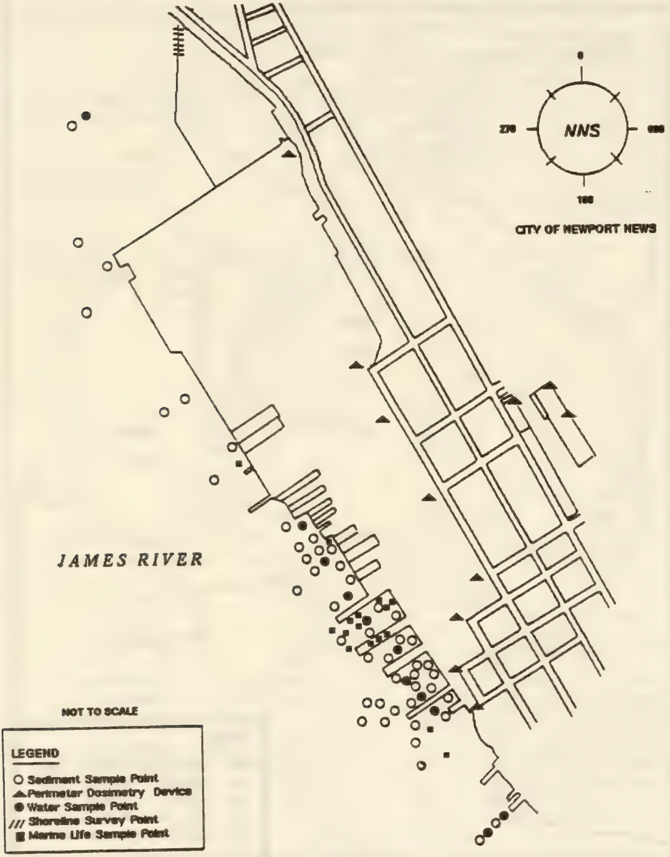


FIGURE 19
ENVIRONMENTAL MONITORING LOCATIONS AT
NORFOLK NAVAL SHIPYARD, PORTSMOUTH, VA

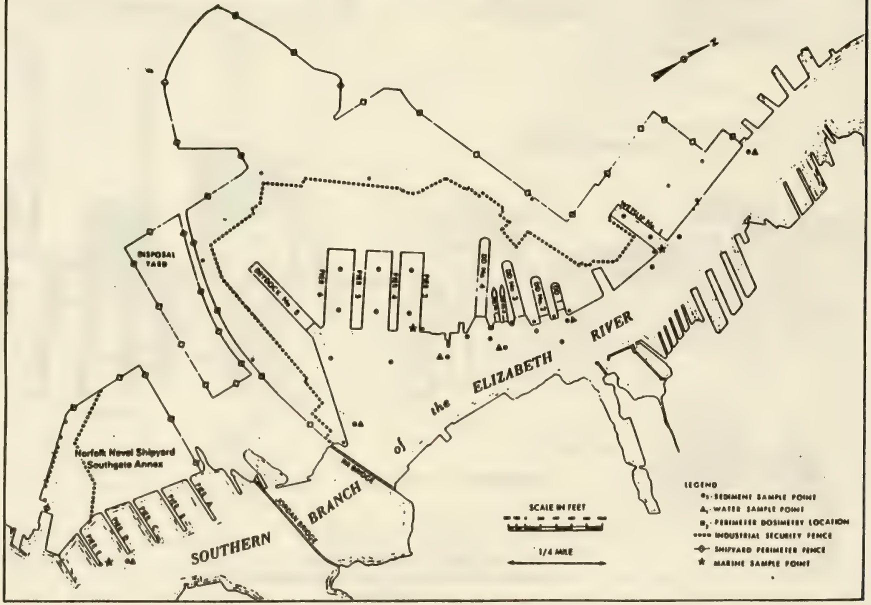
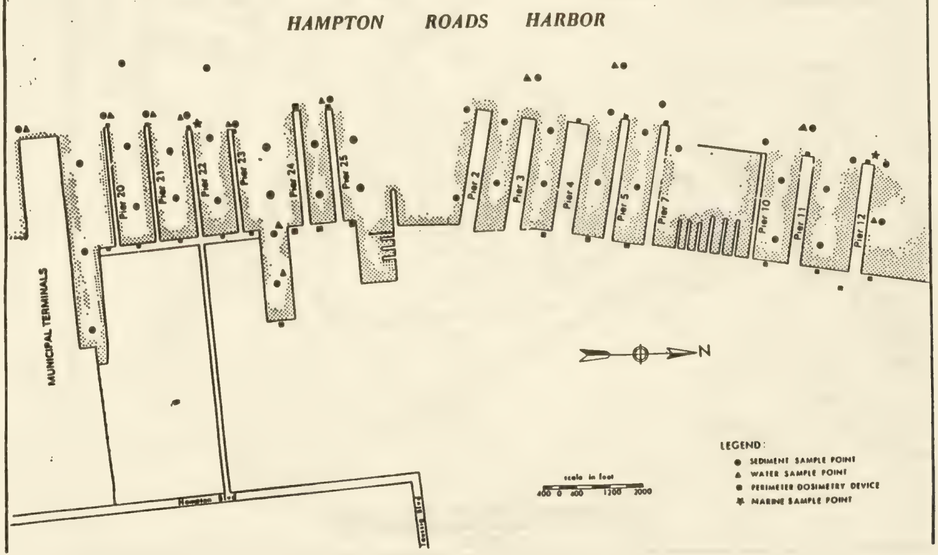
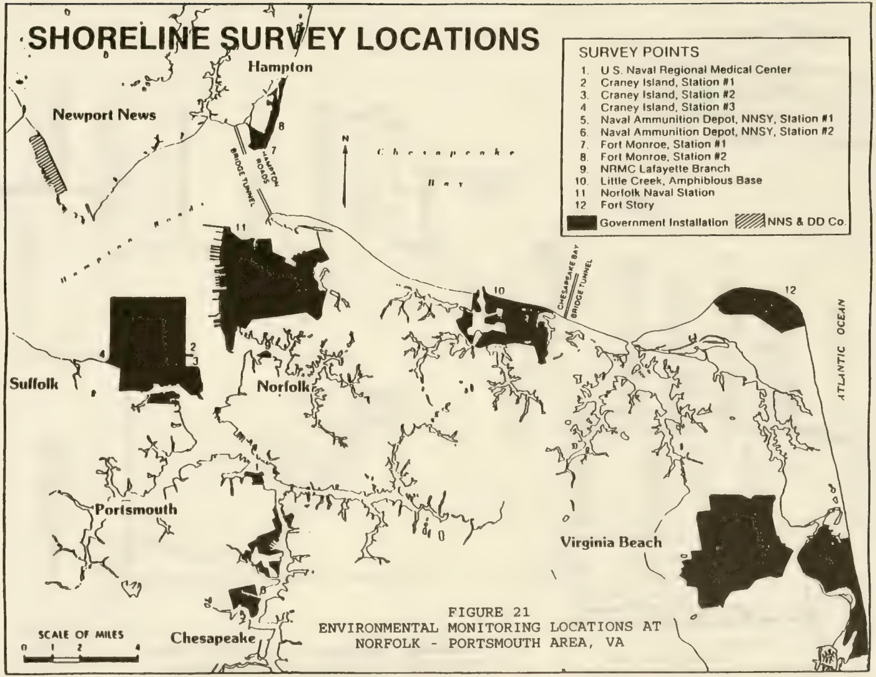


FIGURE 20
ENVIRONMENTAL MONITORING LOCATIONS AT
U.S. NAVAL STATION, NORFOLK, VA



NOFORN


SHORELINE SURVEY LOCATIONS
SURVEY POINTS
1. U S. Naval Regional Medical Center
2 Craney Island, Station #1
3. Craney Island, Station #2
4 Craney Island, Station #3
5. Naval Ammunition Depot, NNSY, Station #1
6. Naval Ammunition Depot, NNSY, Station #2
7. Fort Monroe, Station #1
8. Fort Monroe, Station #2
9. NRMC Lafayette Branch
10. Little Creek, Amphibious Base
11 Norfolk Naval Station
12 Fort Story
Government Installation
NNS & DD Co.
Hampton
Newport News
HAMPTON ROADS
BRIDGE TUNNEL
N
Chesapeake
Bay
Hampton Roads
CHESAPEAKE BAY
BRIDGE TUNNEL
ATLANTIC OCEAN
Suffolk
Norfolk
Portsmouth
Virginia Beach
Chesapeake
SCALE OF MILES
0
1
2
4
1
2
3
4
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6
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10
11
12

FIGURE 21
ENVIRONMENTAL MONITORING LOCATIONS AT
NORFOLK - PORTSMOUTH AREA, VA

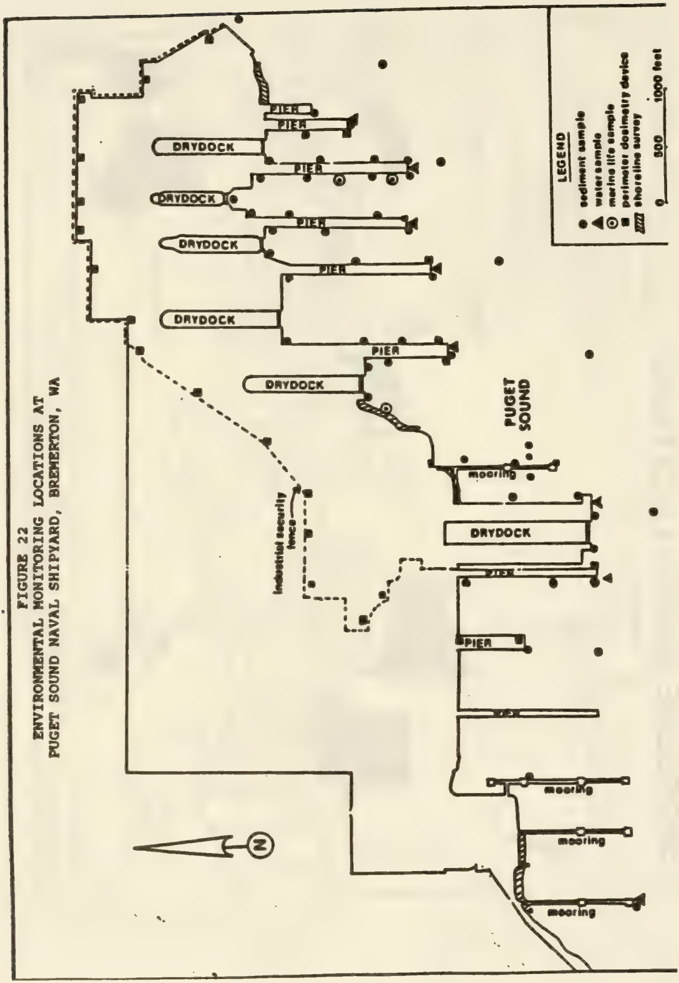

FIGURE 22
ENVIRONMENTAL MONITORING LOCATIONS AT
PUGET SOUND NAVAL SHIPYARD, BREMERTON, WA

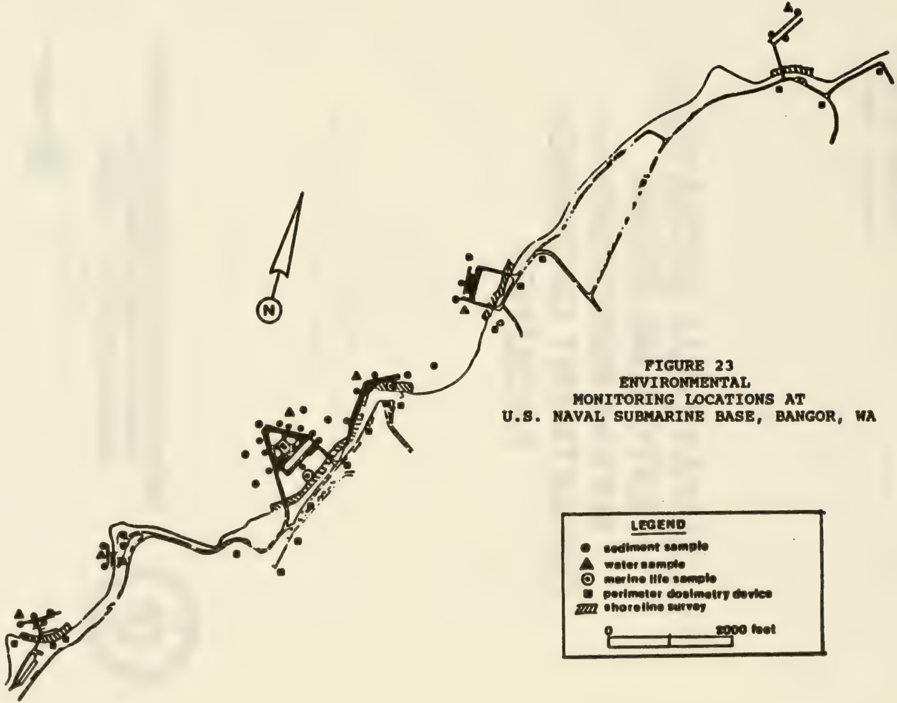

FIGURE 23
ENVIRONMENTAL
MONITORING LOCATIONS AT
U.S. NAVAL SUBMARINE BASE, BANGOR, WA

REPORT NT-95-3
MARCH 1995

OCCUPATIONAL RADIATION EXPOSURE FROM NAVAL REACTORS' DEPARTMENT OF ENERGY FACILITIES

NAVAL NUCLEAR PROPULSION PROGRAM
OFFICE OF NAVAL REACTORS
WASHINGTON, D.C. 20585

Report NT-95-3
March 1995

OCCUPATIONAL RADIATION EXPOSURE
FROM NAVAL REACTORS'
DEPARTMENT OF ENERGY FACILITIES

1994

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Office of Naval Reactors

Approved by

B DeMars

B. DeMARS
Admiral, U. S. Navy
Director
Naval Nuclear Propulsion

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SUMMARY

The Naval Nuclear Propulsion Program is a joint Department of Energy (DOE) / Department of the Navy Program with central control by a single headquarters organization. Within the Department of Energy, the organization is designated as the Office of Naval Reactors and it operates two DOE laboratories, three other DOE Sites which have prototype Naval nuclear propulsion plants (one of these sites also operates the Expended Core Facility), and two nuclear component engineering and procurement organizations. Table 1 shows the facilities which conduct radioactive work associated with the Naval Reactors Program and the date when such work began. The Naval Reactors' Department of Energy facilities provide research and development, engineering, training, and supply support for the Navy's 99 nuclear-powered submarines and thirteen nuclear-powered surface ships which were in operation at the end of 1994.

Radiation exposures to personnel monitored for radiation associated with Naval Reactors' Department of Energy facilities are summarized in this report. Also included in this report is radiation exposure information from the Shippingport Atomic Power Station, near Pittsburgh, Pennsylvania. Shippingport was developed by the Naval Reactors Program, in conjunction with Duquesne Light Company, as the world's first full-scale atomic power plant solely for the production of electricity, and began operation in 1957. Starting in 1974, the light water breeder reactor (LWBR) core was installed at Shippingport; this was the first reactor to prove that fuel breeding was possible in a water cooled plant. Shippingport was shut down in 1982 and turned over to another office of the Department of Energy for dismantlement in 1984. Dismantlement was completed in 1989, removing all radioactive components and returning the site to unrestricted use.

Figure 1 shows that the total radiation exposure in 1994 is less than one fifteenth the amount in the peak year of 1975 and the number of personnel monitored has decreased by approximately one half since 1975. The large increase in radiation exposure in 1975 was due to refueling operations at one of the prototype Naval nuclear propulsion plants and to fabrication and installation of the LWBR core at Shippingport. LWBR was unique in this sense because the core was manufactured at one of the Naval Reactors Program laboratories (other cores were manufactured by subcontractors) and the fissile material was uranium-233 rather than uranium-235. Total man-rem in this figure is the sum of the annual exposure of each person monitored for radiation.

No personnel at the Naval Reactors' Department of Energy facilities have ever exceeded the applicable Federal annual exposure limit. The annual limit was 15 rem per year in 1958 and is currently 5 rem per year. Since 1973 no one has exceeded the Federal limit of 3 rem per quarter year established in 1960; prior to 1973, fourteen people at Naval Reactors' Department of Energy facilities exceeded this level. Thirteen of these individuals received exposures less than one rem above the limit, and the remaining individual received 8.1 rem in a quarter. No one has exceeded the Program's limit of 5 rem per year since this limit was established in 1967.

The average occupational exposure of each person monitored at the Naval Reactors' Department of Energy facilities is approximately one eighth of a rem per year. The lifetime accumulated exposure from radiation associated with the Naval Reactors' Department of Energy facilities to date for all personnel monitored has averaged about one rem per person.

According to the standard methods for estimating risk, the risk to the group of personnel occupationally exposed to radiation associated with the Naval Reactors Program is less than the risk these same personnel have from exposure to natural background radiation or to medical radiation. This risk is small compared to the risks accepted in normal industrial activities, and it is small compared to the risks regularly accepted in daily life outside work.

TABLE 1

INITIAL LABORATORY AND PROTOTYPE OPERATIONS

Location	Year Initial Operations Began Involving Radioactive Work
Bettis Atomic Power Laboratory West Mifflin, Pennsylvania	1950
Knolls Atomic Power Laboratory Schenectady, New York	1950[1]
Naval Reactors Facility Idaho Falls, Idaho	1953
Kenneth A. Kesselring Site Ballston Spa, New York	1955
Windsor Site Operation Windsor, Connecticut	1959
Shippingport Atomic Power Station[2] Beaver Falls, Pennsylvania	1957
Westinghouse Plant Apparatus Division Monroeville, Pennsylvania	N/A[3]
Westinghouse Machinery Apparatus Operation Schenectady, New York	N/A[3]

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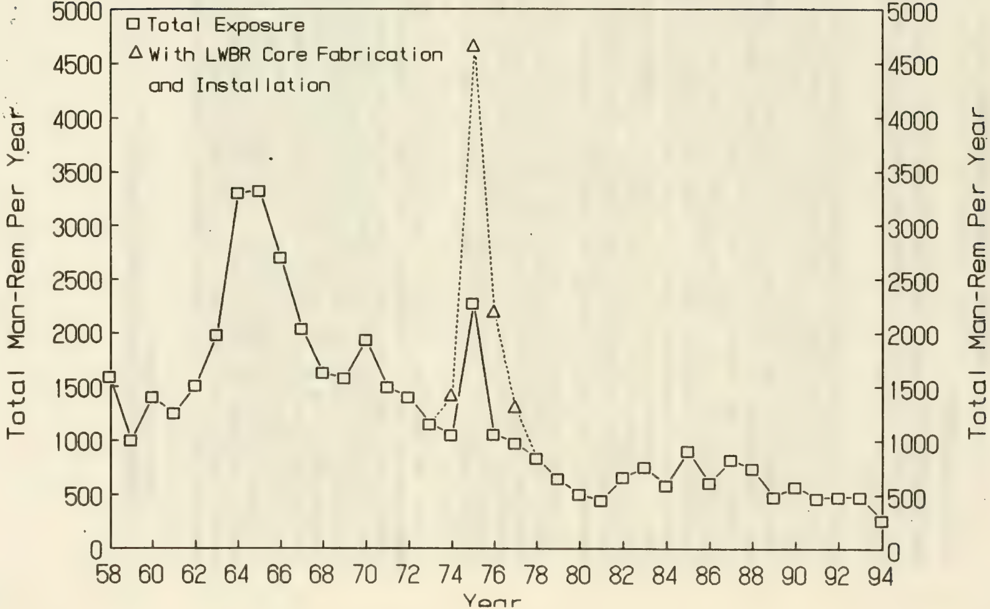
[1] Naval Reactors Program work began at Knolls Atomic Power Laboratory in 1950. Non-Naval Reactors Program isotope separations process research work was performed at Knolls on behalf of the Atomic Energy Commission from 1947 through 1953.

[2] Shippingport Atomic Power Station was shut down in 1982 and turned over to another office of the Department of Energy for dismantlement in 1984. Dismantlement was completed in 1989.

[3] No work involving radioactive materials is performed at either the Westinghouse Plant Apparatus Division or the Westinghouse Machinery Apparatus Operation. The small amount of radiation exposure received by personnel at these facilities is the result of visits to other Program facilities. Westinghouse Machinery Apparatus Operation was formerly operated by General Electric.

FIGURE 1

TOTAL RADIATION EXPOSURE RECEIVED BY
PERSONNEL AT NAVAL REACTORS' DEPARTMENT
OF ENERGY FACILITIES 1958 - 1994



EXTERNAL RADIATION EXPOSURE

Policy and Limits

The policy of the Naval Reactors Program is to reduce to as low as reasonably achievable exposure to personnel from ionizing radiation associated with Naval Reactors' Department of Energy facilities.

Prior to 1960, the radiation exposure limit used in the U. S. for whole body radiation was 15 rem[1] per year. Since 1960, the radiation exposure limits used in the U. S. for whole body radiation exposure have been 3 rem per quarter year and 5 rem accumulated dose for each year beyond age eighteen. These limits were recommended in 1958 by the U. S. National Committee ("Committee" was changed to "Council" when the organization was chartered by the U. S. Congress in 1964) on Radiation Protection and Measurements (ref 1)[2] and by the International Commission on Radiological Protection (ref 2). They were adopted by the U. S. Atomic Energy Commission (AEC) and applied both within the AEC and to licensees in 1960 (ref 3). The U. S. Federal Radiation Council recommendation that these limits be used as guidance for Federal agencies was approved by President Eisenhower on May 13, 1960 (ref 4). A key part of each of these standards has been emphasis on minimizing radiation exposure to personnel.

In 1965 the International Commission on Radiological Protection (ref 5) reiterated the quarterly and accumulated limits cited above but suggested that exceeding 5 rem in one year should be infrequent. Although none of the other organizations referred to above changed its recommendations accordingly, the Naval Reactors Program adopted 5 rem per year as a rigorous limit effective in 1967.

In 1971 the National Council on Radiation Protection and Measurements (ref 6) recommended that 5 rem be adopted as the annual limit under most conditions. In 1974 the Atomic Energy Commission (now Department of Energy) (ref 7) established 5 rem as its annual limit. In 1977 the International Commission on Radiological Protection (ref 8) deleted the accumulated limit and recommended 5 rem as the annual limit. In 1979, the Nuclear Regulatory Commission (NRC) issued a proposed change to the Code of Federal Regulations Title 10, Part 20 to require its licensees to use 5 rem as an annual limit. On January 20, 1987, revised guidance for Federal agencies was approved by President Reagan which eliminated the accumulated dose limit discussed above and established a 5 rem per year limit for occupational radiation exposure (ref 9). The Nuclear Regulatory Commission has revised the Code of Federal Regulations, Title 10, Part 20 making the 5 rem annual limit effective on January 1, 1994.

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[1] 1 rem = 0.01 Sievert

[2] References are listed on pages 57 through 60.

The Naval Reactors Program Exposure Limits since 1967 have been:

3 rem per quarter year
5 rem per year

Special limits are in effect such as for hands and feet; however, there have been few cases where these limits have been more restrictive than the whole body radiation exposure limits. Therefore, the radiation exposures discussed in this report are nearly all from whole body radiation. Controls are also in effect to minimize any occupational radiation exposure to the unborn child of a pregnant worker.

Each of the Naval Reactors' Department of Energy facilities is required to have an active program to reduce radiation exposure to the minimum practicable.

Sources of Radiation at Prototypes

Three of the Naval Reactors Department of Energy sites operate prototype Naval nuclear propulsion plants (Kesselring Site Operation located near Ballston Spa, New York; Windsor Site Operation near Windsor, Connecticut; and the Naval Reactors Facility on the Idaho National Engineering Laboratory (INEL) site near Idaho Falls, Idaho). These facilities are engaged in the testing of nuclear propulsion plants for the U. S. Navy and the training of U. S. Navy propulsion plant operators. The Naval Reactors Facility also houses the Expended Core Facility (ECF). Personnel at the ECF receive, examine, and prepare spent Naval fuel modules for transfer to the Idaho Chemical Processing Plant. ECF also examines the Naval Reactors Program's irradiated material samples from the INEL's Test Reactor Area.

The radiation exposures at the prototype sites originate primarily from pressurized water reactors. Water circulates through a closed piping system to transfer heat from the reactor core to a secondary steam system isolated from the reactor cooling water. Trace amounts of corrosion and wear products are carried by reactor coolant from reactor plant metal surfaces. Some of these corrosion and wear products are deposited on the reactor core and become radioactive from exposure to neutrons. Reactor coolant carries some of these radioactive products through the piping systems where a portion of the radioactivity is removed by a purification system. Most of the remaining radionuclides transported from the reactor core deposit in the piping systems.

The reactor core is installed in a heavy-walled pressure vessel within a primary shield. This shield limits radiation exposure from the gamma and neutron radiation produced when the reactor is at power. Reactor plant piping systems are installed primarily inside a reactor compartment which is surrounded by a secondary shield. Access to the reactor compartment is permitted only after the reactor is shut down. Most radiation exposure to personnel comes from inspection, maintenance and repair inside the reactor compartment. The major source of this radiation is cobalt-60 deposited inside the piping systems. Cobalt-60 emits two high energy gamma rays and a low energy beta particle for every radioactive decay. Its half-life is 5.3 years.

Neutrons produced when reactor fuel fissions are shielded by both primary and secondary shields before penetrating to occupied areas. Radiation exposure to personnel from these neutrons during reactor operation is much less than from gamma radiation. After reactor shutdown, when maintenance and other support work is done, no neutron exposure is detectable. As a result, the radiation exposures at prototypes are primarily from gamma radiation.

Radiation exposure at the Expended Core Facility is also due to gamma radiation emitted by irradiated reactor fuel and structural components which were inside the reactor vessel during operation and became radioactive by exposure to neutrons. Work on these components is performed remotely in either specially designed shielded cells or in deep water pits where many feet of water shield personnel.

Exposures listed in this report for prototype personnel include Department of Energy employees and contractors as well as exposure to Navy staff and students involved in training at the sites.

Sources of Radiation at Laboratories

The two Naval Reactors' laboratories (Bettis Atomic Power Laboratory located near Pittsburgh, Pennsylvania and Knolls Atomic Power Laboratory near Schenectady, New York) conduct research and development work on improved nuclear propulsion plants for U. S. Navy warships. At the laboratories, external radiation exposure is attributable to examination and analysis of irradiated materials and fuel. Gamma radiation is the significant contributor to dose. Although alpha and beta radiation are present, they are generally well shielded. Neutron radiation contributes very little to doses at the laboratories.

Irradiated materials include mixed fission products and activation products. The activation products are identical to those discussed in the preceding section. Fission products are the radioactive species produced by the fissioning of nuclear fuel. Fission products generally emit both beta and gamma radiation and have half lives ranging from hours to many years.

In cases where these materials emit significant levels of radiation, the analyses and examinations are performed remotely using special tooling in shielded cells similar to those used at the Expended Core Facility. With regard to fuel, the preparation of fuel specimens involves the handling of unirradiated uranium. The dose rates from these materials are generally low. Irradiated fuel specimens are handled in the shielded cells.

Radiation exposures for the Shippingport Atomic Power Station are also included under the heading for laboratory personnel. The sources of radiation exposure at Shippingport are similar to those at the prototype sites. From 1974 to 1977, the Bettis Atomic Power Laboratory fabricated and installed the Light Water Breeder Reactor (LWBR) core for Shippingport. The fissile fuel for this core was uranium-233 and the fertile fuel was thorium-232. Enriched uranium-233 contains a significantly higher level of uranium-232 than enriched uranium-235. The radioactive decay chain of uranium-232, in turn, includes thallium-208 which emits a high energy gamma ray with each decay; accordingly, the radiation exposure of personnel fabricating the LWBR core was much higher than for fabrication of traditional uranium-235 cores. In addition to fabrication, there was also significant radiation exposure due to LWBR installation inside the Shippingport power plant.

Also included under the laboratory heading is the small amount of exposure to personnel assigned to the two Naval Reactors' Department of Energy nuclear component engineering and procurement organizations (the Westinghouse Plant Apparatus Division located near Monroeville, Pennsylvania and the Westinghouse Machinery Apparatus Operation near Schenectady, New York). In 1994, personnel at these facilities received about 2.5 man-rem of occupational radiation exposure. Since no radioactive material is handled at these facilities, this exposure is the result of visits to other Naval Reactors Program activities where nuclear-powered ships are built and maintained.

Control of Radiation

Reactor plant shielding is designed to minimize radiation exposure to personnel. Shield design criteria establishing radiation levels in various parts of each prototype are personally approved by the Director of the Naval Nuclear Propulsion Program. The Director of the Naval Nuclear Propulsion Program also personally approved the shield design criteria for the Shippingport Atomic Power Station.

Prototype design is also controlled to keep locations, such as duty stations where personnel need to spend time, as far as practicable away from the reactor compartment shield. In addition, radiation outside propulsion plant spaces during reactor plant operation is not generally any greater than natural background radiation.

Laboratories and prototype sites are designed so that radioactive material outside of reactor plants is handled only in specially designed and shielded facilities. The Naval Reactors' Department of Energy facilities limit to the minimum the number of places where radioactive material is allowed. Specific traffic routes are required to be used for any movement of radioactive material outside these facilities. A radioactive material accountability system is used to ensure no radioactive material is lost or misplaced in a location where personnel could unknowingly be exposed. Regular inventories are required for every item in the radioactive material accountability system. Radioactive material is tagged with yellow and magenta tags bearing the standard radiation symbol and the measured radiation level. Radioactive material is required to be placed in yellow plastic, and the use of yellow plastic is reserved solely for radioactive material. All personnel assigned to Naval Reactors' Department of Energy facilities are trained to recognize that yellow plastic identifies radioactive material and to initiate immediate action if radioactive material is discovered out of place.

Access to radiation areas is controlled by posted signs and barriers. Personnel are trained in the access requirements, including the requirement to wear dosimetry devices to enter these areas. Dosimetry devices are also posted near the boundaries of these areas to verify that personnel outside these areas do not require monitoring. Frequent radiation surveys are required using instruments which are checked before use and calibrated regularly. Areas where radiation levels are greater than 0.1 rem per hour are called high radiation areas and are locked or guarded. Compliance with radiological controls requirements is checked frequently by radiological controls personnel and by other personnel not affiliated with the radiological controls organization.

Dosimetry

Thermoluminescent dosimeters (TLD's) are dosimetry devices worn by personnel to measure their exposure to gamma, neutron, and beta radiation. Prior to 1975, film badges were used as described in detail below. The TLD's used at the prototypes contain two chips of calcium fluoride with added manganese. The TLD's used at the laboratories contain four chips of lithium fluoride. It is characteristic of thermoluminescent material that radiation causes internal changes which make the material, when subsequently heated, give off an amount of light directly proportional to the radiation dose.

Since the types of radiation to which personnel are exposed are different at the laboratories than at the prototypes, the design of the dosimeters is also different. At the prototypes, the source of radiation exposure is high energy gamma radiation, whereas at the laboratories and the Expended Core Facility, high and low energy gamma radiation and beta radiation are present. Shippingport used dosimeters similar to the ones used at the prototypes. At all facilities, separate TLD's are used for the few applications where neutron monitoring is required.

The calcium fluoride TLD's used at the prototypes are designed such that the two calcium fluoride chips are in contact with a metallic heating strip with heater wires extending through the ends of a surrounding glass envelope. The glass bulb is protected by a plastic case designed to permit the proper response to gamma radiation of various energies. The lithium fluoride TLD's used at the laboratories and the Expended Core Facility are designed such that the four lithium fluoride chips are encapsulated in teflon and mounted into pre-drilled holes in an aluminum card.

The processing, that is reading, of the calcium fluoride TLD's is performed manually. A trained operator removes the glass bulb from the plastic case and places it in a TLD reader so that the metal heater wires contact an electrical circuit. An electronically controlled device heats the calcium fluoride chips to several hundred degrees centigrade in a timed cycle, and the intensity of light emitted is measured and converted to a digital readout in units of rem. The heating cycle also anneals the calcium fluoride chips so that the dosimeter is zeroed and ready for subsequent use. The entire cycle of reading a TLD described here takes about thirty seconds.

The processing of the laboratories' lithium fluoride TLD's is performed automatically, that is, the operator can load as many as 1400 lithium fluoride cards into the reader and the TLD reader automatically reads one TLD card at a time. To read the radiation exposure from the lithium fluoride TLD's, a trained operator removes the aluminum cards from the plastic cases and places them into cartridges which are loaded into the microprocessor-controlled TLD reader. To start the read process, one TLD card is automatically removed from the cartridge and positioned into the read position where the bar code identification number is read. The four chips are then simultaneously heated to several hundred degrees centigrade using four precisely temperature-controlled streams of hot nitrogen gas. During the heating of the TLD's, the lithium fluoride TLD's (like the calcium fluoride TLD's) give off light in proportion to the radiation they received. The light is converted to a graphical and digital readout as well as digitally stored on a microcomputer hard disk. This heating cycle also anneals the TLD chips so that the dosimeter is zeroed and ready for subsequent use. After readout, the TLD is then automatically moved to an unload cartridge. The entire read cycle for one card takes, on the average, 30 seconds. After processing, the computer converts the light output to dose in units of rem.

The rapid readout of the calcium fluoride and lithium fluoride TLD's was one reason for changing from film badges to TLD's. Processing film badges was a time consuming chemical process; the use of TLD's permits more frequent measurement of a worker's radiation exposure than film badges. TLD's are processed at least quarterly, and for those individuals who are expected to receive higher exposures, at least monthly. In addition, for those individuals who enter a reactor compartment, the TLD's are processed daily.

To ensure accuracy of the TLD systems, several periodic calibration and accuracy checks are performed. For example, all TLD's are checked when new. In addition the lithium fluoride TLD's are checked, at a minimum, once a year for accurate response to known exposures, and the calcium fluoride TLD's are checked, at a minimum, once every six months. The calcium fluoride TLD readers are calibrated once a year to verify accuracy by one of several calibration facilities having precision radiation sources directly traceable to the National Institute of Standards and Technology (NIST) and precision TLD standards. The lithium fluoride readers are calibrated to a local source at least once a week, and to a calibration source directly traceable to NIST every two years. In addition, checks on the readers are performed daily and during the reading of TLD's to ensure proper reader operation and accuracy utilizing both an internal electronic standard which is built into each reader and quality control dosimeters which have been exposed to a known exposure level.

In addition to these calibrations and checks, the laboratories and prototypes have an independent quality assurance program to monitor the accuracy of TLD's and the TLD readers in use. TLD's are pre-exposed to exact amounts of radiation by NIST or one of the laboratories and provided to the prototype and/or laboratory for reading. To assure objectivity, the prototype or laboratory being tested is not told of the radiation values to which each dosimeter has been exposed. The results are then compared to the actual exposures. Any inaccuracies found by these tests that exceed established permissible error bands result in appropriate corrective action such as recalibration of a failed TLD reader. In addition, the laboratories participate in nationwide intercomparison studies as they are conducted. The results of this program demonstrate that the radiation to which personnel are exposed is being measured by the TLD system with an average error of less than 10%.

Pocket ionization chambers with an eyepiece permit the wearer to read his own radiation exposure. This pocket dosimeter is required in addition to a TLD when entering a reactor compartment or other high radiation area. Pocket dosimeters are used to enable the wearer to keep track of his own radiation exposure during a work period. The official record of radiation exposure is obtained from the TLD.

Dosimetry devices are worn on the trunk of the body, normally at the waist or chest. In some special situations dosimeters are worn at other locations, for example on the hands or fingers or head.

Any discrepancies that occur between TLD and pocket dosimeter measurements are investigated. These investigations include making independent estimates of the worker's exposure using such methods as time spent in the specific radiation area and comparing the estimates with the TLD and pocket dosimeter measurements to determine which measurement is most accurate.

In 1975, the conversion from film badges to TLD's for measuring radiation exposure was completed. Prior to this time film packets like those used for dental x-rays were placed in holders designed to allow differentiating between types of radiation. The darkness of the processed film was measured with a densitometer and converted to units of radiation exposure. When the first personnel radiation exposures were measured by Naval Reactors' Department of Energy facilities, there already was widespread photodosimetry experience and precise procedures existed to provide reproducible results.

Each film badge was clearly marked with a name or number corresponding to the individual to whom it was assigned. In high radiation areas every worker also wore a pocket dosimeter which was read when the worker left the area. At the end of each month when the film badges were processed, the film badge measurements were compared with the sum of the pocket dosimeter readings.

For approximately 20 years, neutron monitoring at the Naval Reactors' Department of Energy facilities was performed using neutron film badges. These facilities now use lithium fluoride TLD's to monitor neutron exposure of the few personnel exposed to neutron sources such as for radiation instrument calibration and for reactor plant instrumentation source handling. These measured neutron exposures have been included with gamma radiation exposures in the total whole body radiation exposure discussed in this report, but because neutron exposures are so low, the radiation exposures in this report are nearly all from gamma radiation.

Because personnel at the laboratories can be exposed to both gamma and beta radiation, beta monitoring has been routinely performed using film badges or lithium fluoride TLD's. Monitoring for beta radiation is not normally required at the prototypes because beta radiation does not penetrate the metal boundaries of the reactor coolant system. Beta radiation needs to be considered in maintenance or repair operations at the prototypes only when systems are opened and personnel are close to surfaces which have been contaminated with radioactive corrosion products from reactor coolant. In cases where shielding such as clothing or eyeglasses or plastic contamination control materials can be used to completely shield out the beta radiation, personnel are not monitored for beta radiation. In those cases where the beta radiation cannot be shielded, prototype personnel are monitored with lithium fluoride TLD's provided by the laboratories.

Monitoring for personnel external exposure due to alpha radiation is not performed. Alpha radiation does not penetrate past the dead layer of a person's skin and, therefore, does not contribute to an individual's external radiation dose.

Physical Examinations

Radiation medical examinations have been required since the beginning of operations by the Naval Reactors' Department of Energy facilities for personnel occupationally exposed to radiation. These examinations are conducted in accordance with standard protocols. In these examinations the doctor pays special attention to any condition which might medically disqualify a person from receiving occupational radiation exposure or pose a health risk or safety hazard to the individual or their co-workers, or detrimentally affect the safety of the workplace. Passing this examination is a prerequisite for obtaining dosimetry which permits entry to areas where radiation exposure can be received. For military personnel who have already been screened by physical examinations, few fail this radiation medical examination. For civilian workers, the failure rate is a few percent. However, failure of this examination does not mean a worker will not have a job. Since workers spend most of their time performing non-radioactive work, inability to qualify for radioactive work does not restrict their job opportunities. No worker at Naval Reactors' Department of Energy facilities has been released for inability to pass a radiation medical examination.

Radiation medical examinations are given prior to initial radiation work, periodically thereafter, and at termination of radioactive work in the Naval Reactors Program (or at termination of employment). The periodic examinations are conducted in accordance with the following frequencies:

Age	Interval
18-24	Pre-placement
25-49	5 years
50-59	2 years
≥60	1 year

A radiation medical examination includes a review of medical history to determine, among other subjects, past radiation exposure, history of cancer, history of radiation therapy, and family history of cancer. In the medical examination, particular attention is paid to evidence of cancer or a precancerous condition. Laboratory procedures include urinalysis, blood analysis, and comparison of blood constituents to a specific set of standards. In the event an evaluation determines that an individual is disqualified, the individual is restricted from receiving occupational radiation exposure.

Radiological Controls Training

Periodic radiological controls training is performed to ensure each person understands the general and specific radiological conditions which he might encounter, understands his responsibility to the Naval Reactors Program and the public for safe handling of radioactive materials, understands the risks associated with radiation exposure and understands his responsibility to minimize his own radiation exposure. Training is also provided on the biological risk of radiation exposure to the unborn child. Prior to being authorized to perform radioactive work, an employee is required to complete satisfactorily a radiological controls training course, including a written examination. A typical course for workers ranges from 16 to 32 hours. In written examinations on radiological controls, short answer questions, such as multiple choice and true-false questions, are prohibited. The following are the minimum training requirements for workers:

1. Radiation Exposure Control:

    a. State the limits for whole body penetrating radiation. Explain that the rem is a unit of biological dose from radiation.

    b. Discuss the importance of the individual keeping track of his/her own exposure. Know how to obtain year-to-date exposure information.

    c. Know that local administrative control levels are established to maintain personnel radiation exposure as low as reasonably achievable. Know your own exposure control level and who can approve changes to this level.

    d. Discuss procedures and methods for minimizing exposure such as working at a distance from a source, reducing time in radiation areas, and using shielding.

e. Know that a worker is not authorized to move, modify, or add temporary shielding without specific authorization.

f. Discuss potential sources of radiation associated with work performed by the individual's trade.

g. Discuss the action to be taken if an individual loses dosimetry equipment while in a posted radiation or high radiation area.

h. Discuss how to obtain and turn in dosimetry equipment.

i. Know that thermoluminescent dosimetry equipment is required to be worn on the portion of the individual's body that receives the highest exposure and that pocket dosimeters are worn at the same location on the body as the thermoluminescent dosimetry. Know that only radiological controls personnel can authorize movement of dosimetry equipment from areas of the body where dosimetry is normally worn (such as the chest or waist) to other areas of the body.

j. Be aware of the seriousness of violating instructions on radiation warning signs and unauthorized passage through barriers.

k. Explain how "stay times" are used.

l. Know that Naval nuclear work at a facility has no significant effect on the environment or on personnel living adjacent to the facility.

m. Explain the risk associated with personnel radiation exposure. Know that any amount of radiation exposure, no matter how small, might involve some risk; however, exposure within accepted limits represents a risk that is small compared with normal hazards of life. The National Council on Radiation Protection and Measurements has stated that while exposures of workers and the general population should be kept to the lowest practicable levels at all times, the presently permitted exposures limit the risk to a reasonable level in comparison to nonradiation risks. Know that cancer is the main potential health effect of receiving radiation exposure. Know that any amount of radiation exposure to the unborn child, no matter how small the exposure, might involve some risk; however, exposure of the unborn child within accepted limits represents a risk that is small when compared with other risks to the unborn child. Know that the risk to future generations (genetic effect) is considered to be even smaller than the cancer risk and that genetic effects have not been observed in humans.

n. Know how often an individual shall read his/her pocket dosimeter while in a posted high radiation area. Know that worker shall leave a posted high radiation area when his/her pocket dosimeter reaches three quarters scale or when a preassigned exposure is reached, whichever is lowest.

o. Know that stay times and predetermined pocket dosimeter readings are assigned when working in radiation fields of 1 rem/hour or greater. Know that the worker shall leave the work area when either the assigned stay time or pocket dosimeter reading is reached.

2. Contamination Control:

a. Discuss how contamination is controlled during radioactive work (e.g., containment in plastic bags and use of contamination containment areas). Explain that these controls limit exposure to internal radioactivity to insignificant levels.

b. Discuss how contamination is detected on personnel.

c. Discuss how contamination is removed from objects and personnel.

d. Discuss potential sources of contamination associated with work performed by the individual's trade.

e. State the beta-gamma surface contamination limit. Discuss the meaning of the units of the limit.

f. Explain what radioactive contamination is. Explain the difference between radiation and radioactive contamination.

g. For personnel who are trained to wear respiratory protection equipment, state the controls for use of such equipment. State the limits for airborne particulate radioactivity.

h. Discuss the required checks to determine whether personnel contamination monitoring equipment is operational prior to conducting personnel monitoring. Discuss the action to be taken if the checks indicate the equipment is not operating properly.

i. Discuss the actions to be taken if personnel contamination monitoring equipment alarms while conducting personnel monitoring.

j. Discuss the procedure to package and remove a contaminated item from a controlled surface contamination area.

k. Know that no health effects are expected from receiving radioactive contamination associated with Naval nuclear propulsion plants on the skin.

3. Accountability of Radioactive Materials: Know that radioactive materials are accounted for when transferred between radiologically controlled areas by tagging, by tracking location, and through the use of radioactive material escorts.

4. Waste Disposal:

a. Discuss how individual workers can reduce the amount of radioactive liquid and solid waste generated for the specific type of duties performed.

b. Discuss the importance of proper segregation of non-contaminated, potentially contaminated, and contaminated material.

c. Know what reactor plant reuse water is. Discuss the appropriate uses of reactor plant reuse water.

5. Radiological Casualties:

a. Discuss the need for consulting radiological controls personnel when questions or problems occur. Understand the importance of complying with the instructions of radiological controls personnel in the event of a problem involving radioactivity.

b. Discuss procedures to be followed in the event of a spill of material (liquid or solid) which is or might be radioactive.

- c. Discuss procedures to be followed when notified that airborne radioactivity is above the limit.

- d. Discuss procedures to be followed in the event a high radiation area is improperly controlled.

- e. Discuss actions to be taken when an individual discovers his/her pocket dosimeter is off-scale or has recorded a higher reading than expected.

6. Responsibilities of Individuals: Discuss actions required in order to fulfill workers' responsibilities. Discuss the responsibility of the individual to notify his/her employer of medical radiation therapy, medical diagnosis involving radioisotopes, open wounds or lesions, physical conditions which they feel affects their qualification to receive occupational radiation exposure, or occupational radiation exposure from past or current outside employment. Discuss the responsibility of the individual to report to area supervision or radiological controls personnel any condition that might lead to or cause avoidable exposure to radiation.

7. Practical Ability Demonstrations: These demonstrations are performed on a mock-up.

   - a. Demonstrate the ability to read all types of pocket dosimeters used by the organization.

   - b. Demonstrate the proper procedure for donning and removing a full set of anticontamination clothing.

   - c. Demonstrate the proper procedures for entering and leaving a high radiation area, a radiologically controlled area, and a control point area, including proper procedures for self-monitoring. Demonstrate the ability to read and interpret posted radiation and contamination survey maps.

   - d. Demonstrate the ability to properly package and remove an item from a controlled surface contamination area.

   - e. Demonstrate action to be taken by one or two workers in the event of a spill of radioactive liquid.

   - f. For personnel who will enter or remain in areas where respiratory protection equipment is required, demonstrate the proper procedure for donning and removing the type of respiratory equipment the individual will be required to wear in conjunction with anticontamination clothing. In addition, individuals who are trained to wear air-fed hoods demonstrate the proper response to take if supply air is lost while wearing an air-fed hood.

g. For personnel who are trained to work in contamination containment areas, demonstrate the proper procedures for working in these areas. This demonstration includes a pre-work inspection, transfer of an item into the area, a work evolution in the area, and transfer of an item out of the area.

In addition to passing a written examination, completion of this training course requires satisfactory performance during basic types of simulated work operations. For an employee to continue as a radiation worker, he is required to requalify in a manner similar to the initial qualification at least every two years. Between these qualification periods, personnel are selected at random for additional written and practical work operation examinations to assess their retention of knowledge and practical abilities. Training is also conducted by individual shop instructors in the specific job skills for radiation work within each trade. For complex jobs this is followed by special training for the specific job, frequently using mock-ups outside radiation areas.

Radiological controls technicians are required to complete a course of six months to one year in length in radiological controls, to demonstrate their practical abilities in work operations and drills and to pass comprehensive written and oral examinations. Radiological controls supervisors are required to have at least the same technical knowledge and abilities as the technicians; however, passing scores for supervisors' examinations are higher or supervisors' examinations are more difficult than for technicians. Oral examinations are conducted by radiological controls managers and senior supervisors and require personnel to be able to evaluate symptoms of unusual radiological controls situations. The radiological controls technician or supervisor is required to evaluate initial conditions, state immediate corrective action required, state what additional measurements are required, and perform a final analysis of the measurements to identify the specific problem. Subsequent to qualification, periodic training sessions are required in which each radiological controls technician and supervisor demonstrates their continued ability to handle situations such as are used in the oral examinations. At least every two and one half years, radiological controls personnel must requalify through written and practical abilities examinations similar to those used for initial qualification.

Additionally, their first requalification includes an oral examination similar to the one required for initial qualification. Between these qualification periods, radiological controls technicians and supervisors are selected at random for additional written and practical work operation examinations to assess their retention of knowledge and practical abilities. They also participate in unannounced drills.

In addition to the above training for those who are involved in radioactive work, each Naval Reactors' Department of Energy facility employee not involved in radioactive work and each person assigned to a prototype (e.g., for training) is required to receive basic radiological training which is repeated at least annually. This training is to ensure personnel understand the posting of radiological areas, the identification of radioactive materials, and not to cross radiological barriers. This instruction also explains that the radiation environment of personnel outside radiation areas and outside the facility is not significantly affected by nuclear work.

Nuclear Power Training

Prior to being assigned to a prototype Naval nuclear propulsion plant for training, military and civilian personnel are required to pass a six month basic training course at the Navy's Nuclear Power School in Orlando, Florida. While at Nuclear Power School and continuing while at the prototype, these personnel receive extensive radiological controls training including lectures, demonstrations, practical work, radiological controls drills, and written and oral examinations. This training emphasizes the ability to apply basic information on radiation and radioactivity.

Prior to becoming qualified as the Shift Supervisor of a Naval nuclear propulsion prototype plant, that is, the senior contractor supervisor on each shift who is responsible for the timeliness and quality of all training conducted by personnel assigned to his crew, the Shift Supervisor candidate must pass several 8-hour written examinations and a sequence of oral examinations. A key part of these qualification examinations is radiological controls.

Before serving as Plant Manager of a Naval nuclear propulsion prototype plant, the prospective plant manager attends a three month course at the Naval Reactors Program headquarters. The radiological controls portion of this course covers advanced topics and assumes the individual starts with detailed familiarity with Naval nuclear propulsion plant radiological controls. The prospective plant manager must pass both written and oral examinations in radiological controls during this course prior to assuming the position of plant manager of a Naval nuclear propulsion prototype plant.

Radiation Exposure Reduction

Maintaining personnel radiation exposures as low as reasonably achievable involves all levels of management at the Naval Reactors' Department of Energy facilities. Operations, maintenance, and repair personnel are required to be involved in this subject; it is not left solely to radiological controls personnel. To evaluate the effectiveness of radiation exposure reduction programs, managers use a set of goals. Goals are set in advance to keep each worker's exposure under certain levels and to minimize the number of workers occupationally exposed to radiation. Goals are also set on the total cumulative personnel radiation exposure (man-rem) for each major job and for the whole year. These goals are deliberately made difficult to meet in order to encourage personnel to improve performance.

Of the various goals used, the most effective in reducing personnel radiation exposure has been the use of exposure control levels which are lower than the program's quarterly and annual limits. Control levels at the Naval Reactors' Department of Energy facilities range from 0.1 rem to 2 rem for the year, depending on the amount of radioactive work scheduled, whereas 5 rem per year is the annual Program limit.

To achieve the benefits of lower control levels in reducing total man-rem, it is essential to minimize the number of workers permitted to receive radiation exposure. Otherwise the control levels could be met merely by adding more workers. Organizations are required to conduct periodic reviews to ensure the number of workers is the minimum for the work that has to be performed.

The following is a synopsis of the checklist which has been in use for years in maintaining personnel radiation exposure as low as reasonably achievable during radiological work.

Preliminary Planning

- Plan in advance
- Delete unnecessary work
- Determine expected radiation levels

Preparation of Work Procedures

- Plan access to and exit from work area
- Provide for service lines (air, welding, ventilation, etc.)
- Provide communication (sometimes includes closed-circuit television)
- Remove sources of radiation
- Plan for installation of temporary shielding
- Decontaminate
- Work in lowest radiation levels

- Perform as much work as practicable outside radiation areas
- State requirements for standard tools
- Consider special tools
- Include inspection requirements (these identify steps where radiological controls personnel must sign prior to work proceeding)
- Minimize discomfort of workers
- Estimate man-rem

Temporary Shielding

- Control installation and removal by written procedure
- Inspect after installation
- Conduct periodic radiation surveys
- Minimize damage caused by heavy lead temporary shielding
- Balance radiation exposure received in installation against exposure to be saved by installation
- Shield travel routes
- Shield components with abnormally high radiation levels early in the maintenance period
- Shield position the worker occupies
- Perform directional surveys to improve design of shielding by locating sources of radiation
- Use mock-up to plan temporary shielding design and installation

Rehearsing and Briefing

- Rehearse
- Use mock-up duplicating working conditions
- Use photographs
- Brief workers

Performing Work

- Post radiation levels
- Keep excess personnel out of radiation areas
- Minimize beta radiation exposure (anticontamination clothing effectively shields most beta radiation)
- Supervisors and workers keep track of radiation exposure
- Workers assist in radiation and radioactivity measurements
- Evaluate use of fewer workers
- Reevaluate reducing radiation exposures

Since its inception, the Naval Reactors Program has stressed the reduction of personnel radiation exposure. Measures that have been taken to reduce exposure include standardization of procedures, development of new tooling, improved use of shielding, and compliance with strict contamination control measures. For example, most work involving radioactive contamination is performed in total containment. This practice minimizes the potential for spreading contamination and thus reduces work disruptions, simplifies working conditions, and minimizes the cost and exposure to clean up.

Lessons learned during radioactive work and new ways to reduce exposure developed at one organization are made available for use by other organizations in the Naval Reactors Program. This effort allows all of the organizations to take advantage of the experience and developments at one organization and minimizes duplication of effort.

The extensive efforts that have been taken to reduce exposure at Naval Reactors' Department of Energy facilities have also had other benefits, such as reduced cost to perform radioactive work and improved reliability. Efforts such as detailed work planning, rehearsing, total containment, special tools and standardization have resulted in increased efficiency and better access to perform maintenance with the overall result that reliability is improved and costs are reduced.

Radiation Exposure Data

The total occupational radiation exposure received by all personnel at the Naval Reactors' Department of Energy facilities in 1994 was 266 man-rem. Tables 2 and 3 summarize radiation exposure received at the Naval Reactors' Department of Energy facilities since 1958.

Figure 1 (on page 4) shows graphically the total occupational radiation exposure received at the Naval Reactors' Department of Energy facilities. The data shows major increases in the total man-rem exposures in the years 1964 through 1966 and 1975. In 1964 through 1966 the increase in the exposures was primarily due to an increase in reactor plant overhaul and refueling efforts. In 1975, the increase was also primarily due to increased overhaul and refueling work; in addition, as noted in the footnote to Table 2, increased occupational exposure occurred in 1974 through 1977 associated with a civil project, the fabrication and installation of the light water breeder reactor (LWBR) at the Shippingport Atomic Power Station. LWBR work was unique because the core was manufactured at Bettis Atomic Power Laboratory (other cores are manufactured by subcontractors) and the fuel was uranium-233 rather than uranium-235. In addition to fabrication, there was also significant radiation exposure due to LWBR installation inside the Shippingport power plant.

Decreases in total annual exposures, numbers of personnel monitored, and numbers of personnel with annual exposures over 2 rem have been achieved as a result of continuing efforts to reduce radiation exposures to the minimum practicable. Since 1979, the total annual exposure for the laboratories has averaged slightly over 50 man-rem and for all of the prototype sites has averaged less than 600 man-rem.

Since a worker usually is exposed to radiation in more than one year, the total number of personnel monitored cannot be obtained by adding the annual numbers. The total number of personnel monitored for radiation exposure associated with the Naval Reactors' Department of Energy facilities exceeds 142,000 (including the over 92,000 Navy personnel trained as Naval nuclear propulsion plant operators at the prototype sites). Table 4 provides further information about the distribution of their radiation exposures. In 1994, about 99 percent of those monitored for radiation received less than 0.5 rem in a year. Since 1958, the average exposure per year for each person monitored has been 0.12 rem which is less than the 0.30 rem average annual exposure a person receives from natural background radiation (including the inhalation of radon) (ref 10).

Table 4 also lists the numbers of personnel who have exceeded the 3 rem quarterly exposure limit. The total number of persons who have exceeded the quarterly limit since the limit was imposed in 1960 is fourteen. Thirteen of the fourteen personnel had quarterly exposures in the range of 3 to 4 rem, and the person with the highest exposure received 8.1 rem in a quarter; no one has exceeded the quarterly limit since 1973. In none of these cases did personnel exceed the Federal accumulated limit of 5 rem for each year of age over eighteen (5(N-18), which was also established in 1960). Standard procedures require any person who receives greater than 25 rem in a short time period to be placed under medical observation. No one at the Naval Reactors' Department of Energy facilities has reached this level. Since it was established in 1967, no one has exceeded Naval Reactors' limit of 5 rem per year for radiation associated with the Naval Reactors Program.

For the years 1958 to 1994, the average annual exposure per person is 0.12 rem. The average lifetime accumulated radiation exposure for the 142,000 personnel who have been monitored at the Naval Reactors' Department of Energy facilities is about 0.35 rem. Although they account for a significant fraction of the radiation exposure received at the prototype sites each year, the over 92,000 Navy personnel trained to date receive a small percentage of their lifetime exposure at the prototype sites. The bulk of their exposure is received later in their Navy careers; therefore, their accumulated dose is not representative of the lifetime exposure received by personnel permanently assigned to these facilities. If the Navy trainees are subtracted from the total number of personnel monitored, the average lifetime accumulated exposure from radiation associated with Naval Reactors' Department of Energy facilities is approximately one rem. This radiation exposure is much less than the exposure the average American receives from natural background radiation or from medical diagnostic x-rays during his working lifetime (ref 10).

TABLE 2

OCCUPATIONAL RADIATION EXPOSURE RECEIVED BY PERSONNEL MONITORED AT NAVAL REACTORS' LABORATORIES

	Number of Persons Monitored Who Received Exposures in the Following Ranges of Rem for the Year						Total Personnel Monitored	Total Man-Rem[1]
Year	0-1	1-2	2-3	3-4	4-5	>5[2]		
1958	1923	74	15	20	8	31	2071	762
1959	2050	94	21	16	4	0	2185	586
1960	2056	105	43	14	4	3	2225	581
1961	3717	120	57	27	9	4	3934	671
1962	3956	67	38	13	3	1	4078	414
1963	5124	135	47	27	6	1	5340	647
1964	5195	265	135	127	52	23	5797	1854
1965	5586	188	36	33	2	0	5845	977
1966	4493	105	36	12	3	1	4650	600
1967	5006	120	52	34	13	0	5225	668
1968	4958	96	44	29	16	0	5143	606
1969	5589	72	49	42	26	0	5778	754
1970	6346	99	61	39	47	0	6592	819
1971	7378	109	48	32	5	0	7572	646
1972	7000	138	41	17	2	0	7198	626
1973	6867	68	7	0	0	0	6942	368
1974	7568	96	28	1	1	0	7694	221[3]
1975	4719	290	151	57	68	0	5285	280[3]
1976	5304	371	88	0	0	0	5763	219[3]
1977	4639	81	5	0	0	0	4725	201[3]
1978	3609	10	0	0	0	0	3619	143
1979	3367	4	0	0	0	0	3371	100
1980	3330	0	0	0	0	0	3330	78
1981	2510	0	0	0	0	0	2510	72
1982	2672	0	0	0	0	0	2672	82
1983	2717	6	0	0	0	0	2723	93
1984	2933	1	0	0	0	0	2934	67
1985	2338	4	0	0	0	0	2342	59
1986	2261	0	0	0	0	0	2261	35
1987	2189	0	0	0	0	0	2189	27
1988	2029	0	0	0	0	0	2029	31
1989	2108	0	0	0	0	0	2108	31
1990	2228	0	0	0	0	0	2228	28
1991	2216	0	0	0	0	0	2216	28
1992	2162	0	0	0	0	0	2162	25
1993	2066	0	0	0	0	0	2066	22
1994	1978	0	0	0	0	0	1978	25

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[1] Data for 1958 - 1962 does not include exposure information for personnel monitored at the Shippingport Atomic Power Station. Data is not available in summary format.

[2] Limit for the Naval Reactors' Department of Energy facilities was changed to 5 rem per year in 1967.

[3] Total man-rem for 1974 through 1977 does not include exposure received as part of fabrication and installation of the Light Water Breeder Reactor core at the Shippingport Atomic Power Station. If this exposure is included the totals become 588, 2660, 1354, and 524, respectively.

TABLE 3

OCCUPATIONAL RADIATION EXPOSURE RECEIVED BY PERSONNEL MONITORED AT NAVAL REACTORS' PROTOTYPES

	Number of Persons Monitored Who Received Exposures in the Following Ranges of Rem for the Year						Total Personnel Monitored	Total Man-Rem[1]
Year	0-1	1-2	2-3	3-4	4-5	>5[2]		
1958	2415	83	77	50	27	3	2655	833
1959	2390	63	18	3	1	0	2475	420
1960	2558	126	40	28	2	2	2756	822
1961	2600	79	42	13	2	0	2736	576
1962	3653	185	45	20	8	4	3915	1090
1963	4354	270	74	29	12	0	4739	1332
1964	4940	203	102	65	16	2	5328	1446
1965	5595	267	110	80	73	58	6183	2351
1966	5765	311	145	81	39	7	6348	2099
1967	6409	241	72	35	12	0	6769	1372
1968	6564	172	69	5	0	0	6810	1026
1969	5713	188	57	9	0	0	5967	827
1970	5748	215	82	12	0	0	6057	1113
1971	5499	148	26	1	0	0	5674	856
1972	7634	116	3	0	0	0	7753	773
1973	7518	181	28	0	0	0	7727	791
1974	8427	109	20	9	3	0	8568	824
1975	7515	270	131	98	83	0	8097	1998
1976	8282	145	19	0	0	0	8446	845
1977	8813	101	17	2	0	0	8933	782
1978	8890	157	1	0	0	0	9048	698
1979	9908	64	0	0	0	0	9972	546
1980	9818	11	0	0	0	0	9829	433
1981	9679	2	0	0	0	0	9681	381
1982	10464	25	0	0	0	0	10489	576
1983	10816	77	0	0	0	0	10893	660
1984	8694	13	0	0	0	0	8707	525
1985	9136	127	0	0	0	0	9263	851
1986	8122	35	0	0	0	0	8157	576
1987	9021	47	0	0	0	0	9068	798
1988	8328	43	0	0	0	0	8371	707
1989	7261	12	0	0	0	0	7273	451
1990	6548	73	0	0	0	0	6621	549
1991	6369	57	0	0	0	0	6426	444
1992	5301	125	0	0	0	0	5426	458
1993	4934	133	0	0	0	0	5067	466
1994	4370	16	0	0	0	0	4386	241

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[1] Data for 1958 - 1971 does not include Combustion Engineering personnel monitored at the Windsor Site Operation who did not become employees of the General Electric Corporation when operation of the Windsor Site was transferred from Combustion Engineering to General Electric.

[2] Limit for the Naval Reactors' Department of Energy facilities was changed to 5 rem per year in 1967.

TABLE 4

NAVAL REACTORS' DEPARTMENT OF ENERGY FACILITIES DISTRIBUTION OF PERSONNEL RADIATION EXPOSURE

Year	Average Rem Per Person Monitored[1]		Percent of Personnel Monitored Who Received Greater Than 1 Rem[1]		Number of Personnel Who Exceeded 3 Rem/Quarter
	Prototype	Laboratory	Prototype	Laboratory	
1958	0.31	0.37	9.0	7.1	0
1959	0.17	0.27	3.4	6.2	0
1960	0.30	0.26	7.2	7.6	1
1961	0.21	0.17	5.0	5.5	0
1962	0.28	0.10	6.7	3.0	1
1963	0.28	0.12	8.1	4.0	0
1964	0.27	0.32	7.3	10.4	2
1965	0.38	0.17	9.5	4.4	1
1966	0.33	0.13	9.2	3.4	1
1967	0.20	0.13	5.3	4.2	1
1968	0.15	0.12	3.6	3.6	0
1969	0.14	0.13	4.3	3.3	0
1970	0.18	0.12	5.1	3.7	5
1971	0.15	0.09	3.1	2.6	1
1972	0.10	0.09	1.5	2.8	0
1973	0.10	0.05	2.7	1.1	1
1974	0.10	0.08	1.6	1.6	0
1975	0.25	0.50	7.2	10.7	0
1976	0.10	0.23	1.9	8.0	0
1977	0.09	0.11	1.3	1.8	0
1978	0.08	0.04	1.7	0.3	0
1979	0.05	0.03	0.6	0.1	0
1980	0.04	0.02	0.1	0.0	0
1981	0.04	0.03	0.0	0.0	0
1982	0.05	0.03	0.2	0.0	0
1983	0.06	0.03	0.7	0.2	0
1984	0.06	0.02	0.1	0.0	0
1985	0.09	0.03	1.4	0.2	0
1986	0.07	0.02	0.4	0.0	0
1987	0.09	0.01	0.5	0.0	0
1988	0.08	0.02	0.5	0.0	0
1989	0.06	0.01	0.2	0.0	0
1990	0.08	0.01	1.1	0.0	0
1991	0.07	0.01	0.9	0.0	0
1992	0.08	0.01	2.3	0.0	0
1993	0.09	0.01	2.6	0.0	0
1994	0.05	0.01	0.4	0.0	0
Average	0.12	0.12	2.6	3.1	
Overall Average	0.12		2.8		

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[1] Laboratory data for 1958 - 1962 does not include exposure information for personnel monitored at the Shippingport Atomic Power Station. Data is not available in summary format. Prototype data for 1958 - 1971 does not include Combustion Engineering personnel monitored at the Windsor Site Operation who did not become employees of the General Electric Corporation when operation of the Windsor Site was transferred from Combustion Engineering to General Electric.

Table 5 provides information on the distribution of lifetime accumulated exposures for all personnel who were monitored in 1994 for radiation exposure associated with the Naval Reactors' Department of Energy facilities.

TABLE 5

LIFETIME RADIATION EXPOSURE ASSOCIATED WITH NAVAL REACTORS' DEPARTMENT OF ENERGY FACILITIES

Range of Accumulated Lifetime Radiation Exposures	Percentage of Personnel Monitored in 1994 With Lifetime Accumulated Radiation Exposure Within that Range
0 - 5 Rem	94.78
5 - 10 Rem	3.37
10 - 15 Rem	0.97
15 - 20 Rem	0.45
20 - 30 Rem	0.29
30 - 40 Rem	0.07
40 - 50 Rem	0.03
50 - 60 Rem	0.00
60 - 70 Rem	0.02
70 - 80 Rem	0.00
80 - 90 Rem	0.02
> 90 Rem	0.00

The radiation exposure limits used in the U. S. until the recent changes to the Code of Federal Regulations, Title 10, Part 20 limited an individual's lifetime exposure to 5 rem for each year beyond age eighteen. With the recent changes, lifetime exposure is not specifically limited, but is controlled as the result of the annual limit of 5 rem. In their most recent radiation protection recommendations, the National Council on Radiation Protection and Measurements (NCRP) encourages organizations to control lifetime accumulated exposure to less than 1 rem times the person's age (ref 11).

INTERNAL RADIOACTIVITY

Policy and Limits

Naval Reactors' policy on internal radioactivity for personnel associated with the Naval Reactors' Department of Energy facilities continues to be the same as it was more than three decades ago - to prevent significant radiation exposure to personnel from internal radioactivity. The limits invoked to achieve this objective are one-tenth of the levels allowed by Federal regulations for radiation workers. Since 1972, no one has received more than one-tenth the Federal annual internal occupational exposure limit from internal radiation exposure caused by radioactivity associated with work at the Naval Reactors' Department of Energy facilities.

Prior to 1972, two individuals had internal depositions between 50 and 80% of the Maximum Permissible Lung Burden (MPLB), and three individuals had internal depositions ranging from 10% to 50% of the MPLB;[1] no one had a deposition which exceeded the MPLB. The MPLB is the level of radioactivity retained in the individual's lung which would result in an exposure to the person's lung equal to the dose limit for the lung of 15 rem per year if the radioactivity level remained constant throughout the year. Additionally, one individual received a very high localized exposure to his ear drum in 1955 as a result of a fine particle of radioactive material which became lodged in his ear canal for approximately nine days. Although there is no explicit limit for radioactivity deposited in a person's ear, this case resulted in partial hearing loss. This case is discussed further on page 50.

As discussed above for the lungs, the basic Federal limit for radiation exposure to organs of the body from internal radioactivity has been 15 rem per year. There have been higher levels applied at various times for the thyroid and for bones; however, use of these specific higher limits has not been necessary at the Naval Reactors' Department of Energy facilities.

Fifteen rem per year was the limit recommended for most organs of the body by the U. S. National Committee on Radiation Protection and Measurements in 1954 (ref 1), by the U. S. Atomic Energy Commission in the initial edition of ref (3) applicable in 1957, and by the International Commission on Radiological Protection in 1959 (ref 2), and was adopted for Federal agencies when President

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[1] One Knolls Atomic Power Laboratory individual was reported to the Department of Energy in 1982 as exceeding 50% of the maximum permissible lung burden (MPLB) for the year 1969. In 1988, the Laboratory reassessed this case. This assessment found the original internal monitoring analysis, performed by a subcontractor, had a systematic high bias. Taking this high bias into account, the 1988 assessment was that no intake greater than 10% of the MPLB had occurred.

Eisenhower approved recommendations of the Federal Radiation Council May 13, 1960.

In 1977 the International Commission on Radiological Protection revised its recommendations (ref 8), particularly regarding internal exposure. The new recommendations provided a method of combining, and controlling, exposure from internal radioactivity with exposure from external radiation. The effect of the 1977 recommendations was to raise the allowable dose to many organs, with no organ allowed to receive more than 50 rem in a year. In conjunction with these recommendations, more recent knowledge on the behavior and effect of internal radioactivity was used to derive new limits for control of internal radioactivity (ref 12). The Federal guidance approved by President Reagan in 1987 adopted these revised recommendations and methods (ref 9).

Sources of Radioactivity at Prototypes

Radioactivity can get inside the body through air, through water or food, and through surface contamination via the mouth, skin, or a wound. The radioactivity of primary concern at the prototypes is the activated metallic corrosion products on the inside surfaces of reactor plant piping systems. These are in the form of insoluble metallic oxides, primarily iron oxides. Reference 13 contains more details on why cobalt-60 is the radionuclide of most concern for internal radioactivity.

The design conditions for reactor fuel are much more severe for warships than for commercial power reactors. Naval nuclear propulsion prototype plants are built to the same high standards as nuclear-powered warships. As a result of being designed to withstand shock, Naval reactor fuel elements retain fission products including fission gases within the fuel. Sensitive measurements are made frequently to verify the integrity of reactor fuel. Consequently, fission products such as strontium-90 and cesium-137 make no measurable contribution to internal exposure of personnel from radioactivity associated with Naval nuclear propulsion prototype plants. Similarly, alpha emitting radioisotopes such as uranium and plutonium are retained within the fuel elements and are not accessible to personnel operating or maintaining a Naval nuclear propulsion prototype plant.

Because of the high integrity of reactor fuel and because soluble boron is not used in reactor coolant for normal reactivity control in Naval nuclear propulsion prototype plants, the amounts of tritium in reactor coolant are far less than in typical commercial power reactors. The small amounts that are present are formed primarily as a result of neutron interaction with the deuterium naturally present in water. The radiation from tritium is of such low energy that the Federal limits for breathing or swallowing tritium are more than three hundred times higher than for cobalt-60. As a result, radiation exposure to personnel from tritium is far too low to measure. Similarly, the low energy beta radiation from carbon-14, which is formed in small quantities in reactor coolant systems as a result of neutron interactions with nitrogen and oxygen, does not add measurable radiation exposure to personnel operating or maintaining Naval nuclear propulsion prototype plants.

At the Expended Core Facility, the radioactivity of primary concern is radionuclides associated with irradiated nuclear fuel. Highly trained, specialized personnel perform examinations and evaluations of the reactor cores removed from nuclear-powered submarines, surface ships, and prototype plants. These evaluations are performed to obtain important technical data to verify and improve the design of nuclear cores. Although the quantity of radioactive material handled is large, advanced personnel radiological training, radiological engineering designs (e.g., shielded cells and special handling equipment), and radiological monitoring programs (e.g., air monitoring systems) prevent any significant internal exposure.

Sources of Radioactivity at Laboratories

The radionuclides of primary concern at the laboratories are those associated with the nuclear fuel process; these include the fuel itself (uranium-234, uranium-235, and uranium-238) and the principal fission products (strontium-90 and cesium-137). Radioactivity with more restrictive limits than the above radionuclides (e.g., thorium and plutonium) is also present at the laboratories, but only in isolated and specially controlled operations. Highly trained, specialized personnel perform experimental design and testing of new fuel systems as well as verifying the integrity of existing materials. Laboratory personnel handle only small quantities of fuel. The small quantities handled coupled with advanced personnel radiological training, radiological engineering designs (e.g. containment boxes), and radiological monitoring programs (e.g. air monitoring systems) prevent any significant internal exposure.

Residues of the radionuclides described above are present at low levels in some laboratory equipment and facilities which were used for radioactive work in the past. Radiological cleanup is being undertaken to remove these radioactive materials. This effort is performed in a carefully controlled manner; the radiological controls techniques followed during this work (e.g., special radiological training, formal procedures, radiological engineering designs) have proven to be effective in preventing any significant internal exposure.

Control of Airborne Radioactivity

Airborne radioactivity is controlled during routine operations such that respiratory equipment is not normally required. To prevent exposure of personnel to airborne radioactivity, contamination containment tents, bags, or boxes are used. These containments are ventilated to the atmosphere through high efficiency filters which have been designed and tested to remove at least 99.95 percent of particles of a size comparable to cigarette smoke. Radiologically controlled areas such as reactor compartments are also required to be ventilated through high efficiency filters any time work which could cause airborne radioactivity is in progress. Airborne radioactivity surveys are required to be performed regularly in radioactive work areas. Any time airborne radioactivity above the limit is detected in occupied areas, work which might be causing airborne radioactivity is stopped. This conservative action is taken to minimize internal radioactivity even though the Naval Reactors' airborne radioactivity limit would allow continuous breathing for forty hours per week throughout the year to reach an annual exposure of one-tenth the Federal limit. Personnel are also trained to use respiratory equipment when airborne radioactivity above the limit is detected. However, respiratory equipment is seldom needed and is not relied upon as the first line of defense against airborne radioactivity.

It is not uncommon for airborne radioactivity to be caused by radon naturally present in the air. Atmospheric conditions such as temperature inversions can allow the buildup of radioactive particles from radon to occur. Radon can also build up in sealed or poorly ventilated rooms in homes or buildings made of stone or concrete, or it can migrate from the underlying ground. Most cases of airborne radioactivity above Naval Reactors' conservative airborne radioactivity limit in occupied areas have been caused by radon and not from prototype plant or laboratory operations. Procedures have been developed to reduce the radon levels when necessary and allow work to continue after it has been confirmed that the elevated airborne radioactivity is from naturally occurring radon.

Control of Radioactive Surface Contamination

Perhaps the most restrictive regulations in the Naval Reactors Program's radiological controls program are established in the requirements for the control of radioactive contamination. Work operations involving potential for spreading radioactive contamination use containments to prevent personnel contamination or generation of airborne radioactivity. The controls for radioactive contamination are so strict that precautions sometimes have had to be taken to prevent tracking contamination from fallout and natural sources into radiological areas because the contamination control limits used in these areas were below the levels of fallout and natural contamination occurring outside in the general public areas.

Anticontamination clothing, including coveralls, hood (to cover the head, ears and neck), shoe covers and gloves, is provided when needed. However, the basic approach is to avoid the need for anticontamination clothing by containing the radioactivity.

As a result, most work on radioactive materials is performed with hands reaching into gloves installed in containments, making it unnecessary for the worker to wear anticontamination clothing. In addition to providing better control over the spread of radioactivity, this method has reduced radiation exposure since the worker can usually do his job better and faster in his normal work clothing. A basic requirement of contamination control is monitoring all personnel leaving any area where radioactive contamination could possibly occur. Workers are trained to survey themselves (i.e., frisk), and their performance is checked by radiological controls personnel. Frisking of the entire body is required upon leaving an area with radioactive surface contamination, normally using sensitive hand-held survey instruments. Major work facilities are equipped with portal monitors, which are used in lieu of hand-held friskers. Personnel monitor before, not after, they wash. Therefore, washing or showering at the exit of radioactive work areas is not required. The basic philosophy is to prevent contamination, not wash it away.

Surveys for radioactive contamination are taken frequently by trained radiological controls personnel. Results of these surveys are reviewed by senior personnel to provide a double-check that no abnormal conditions exist. The instruments used for these surveys are checked against a radioactive calibration source daily and prior to use, and they are calibrated at least every six months.

Control of Food and Water

Smoking, eating, drinking and chewing are prohibited in radioactive areas. By prohibiting these hand to mouth contacts, the possibility of internal contamination is reduced even further.

Wounds

Skin conditions or open wounds which might not readily be decontaminated are cause for temporary or permanent disqualification from doing radioactive work. Workers are trained to report such conditions to radiological controls or medical personnel, and radiological controls technicians watch for open wounds when workers enter radioactive work areas. In the initial medical examination prior to radiation work and during subsequent examinations, skin conditions are also checked. If the cognizant local medical officer determines a wound is sufficiently healed or considers the wound is adequately protected, he may remove the temporary disqualification.

There have been only a few cases of contaminated wounds at the Naval Reactors' Department of Energy facilities. In most years, none occur. Examples of such injuries which have occurred in the past include a scratched hand, a metallic sliver in a hand, a cut finger, and a puncture wound to a hand. These wounds occurred at the same time the person became contaminated. Insoluble metallic oxides which make up the radioactive contamination remain primarily at the wound site rather than being absorbed into the blood stream. Most contaminated wounds have been promptly and easily decontaminated.

Monitoring for Internal Radioactivity at Prototypes

The radionuclide of most concern for internal radiation exposure from Naval nuclear propulsion prototype plants is cobalt-60. Although most radiation exposure from cobalt-60 inside the body will be from beta radiation, the gamma radiation given off makes cobalt-60 easy to detect. Complex whole body counters are not required to detect cobalt-60 at low levels inside the body. For example, one-millionth of a curie of cobalt-60 inside the lungs or intestines will cause a measurement of two times above the background reading with the standard hand-held survey instrument used for personnel frisking. This amount of internal radioactivity will cause the instrument to reach the alarm level. Every person is required to monitor the entire body upon leaving an area with radioactive surface contamination. Monitoring the entire body is a requirement at the Naval Reactors' Department of Energy facilities; monitoring only a portion of the body, such as just the hands and feet, is not permitted. Therefore, if a person had as little as one-millionth of a curie of cobalt-60 internally, it would readily be detected.

Swallowing one-millionth of a curie of cobalt-60 will cause internal radiation exposure of about 0.08 rem. The radioactivity will pass through the body and be excreted within a period of a little more than one day.

One-millionth of a curie of cobalt-60 still remaining in the lungs one day after an inhalation incident is estimated to cause a radiation exposure of about 2 rem to the lungs over the following year and 6 rem total over a lifetime based on standard calculative techniques recommended by the International Commission on Radiological Protection (ref 12). These techniques provide a convenient way to estimate the radiation exposure a typical individual might be expected to receive from small amounts of internally deposited radioactivity. These techniques account for the gradual removal of cobalt-60 from the lungs through biological processes and the radioactive decay of cobalt-60 with a 5.3 year half-life. However, if an actual case were to occur, the measured biological elimination rate would be used in determining the amount of radiation exposure received.

In addition to the control measures to prevent internal radioactivity and the frisking frequently performed by those who work with radioactive materials, more sensitive internal monitoring is also performed. Equipment designed specifically for monitoring internal radioactivity use a type of gamma radiation sensitive scintillation detector which will reliably detect an amount of cobalt-60 inside the body that is more than one hundred times lower than the one-millionth of a curie used in the examples above. Naval Reactors' prototype sites monitor each employee for internal radioactivity before initially performing radiation work, after terminating radiation work, and periodically in between.

Any person at the prototype who has radioactive contamination above the limit anywhere on the skin of his body during regular monitoring at the exit from a radiologically controlled area is monitored for internal radioactivity with the sensitive internal monitoring equipment. Also any person who might have breathed airborne radioactivity above limits is monitored with the sensitive equipment.

Internal monitoring equipment is calibrated each work shift the equipment is in use. This calibration involves checking the equipment's response to a known source of radiation. In addition, Naval Reactors has an independent quality assurance program in which prototype organizations performing internal monitoring are tested on a periodic basis. This testing involves monitoring a human-equivalent torso phantom, which contains an amount of radioactivity traceable to standards maintained by the National Institute of Standards and Technology. The exact amount of radioactivity in the test phantom is not divulged to the organization being tested until after the test is complete. Any inaccuracies found by these tests that exceed established permissible error limits are investigated and corrected.

Monitoring for Internal Radioactivity at Laboratories

The radionuclides of most concern for internal radiation exposure from laboratory operations include uranium isotopes (uranium-234, uranium-235, and uranium-238) and fission products (primarily strontium-90 and cesium-137). Uranium isotopes are principally alpha emitters. Alpha particles deposit their energy over a much shorter distance than beta or gamma rays because alpha particles are considerably larger in size and have a much greater charge. Fission products emit beta and gamma radiation similar to cobalt-60.

Although uranium-235 is principally an alpha emitter, it also emits several low energy gamma rays. Thorium-234, a daughter of uranium-238, also emits low energy gamma radiation. This low energy gamma radiation can be detected with sensitive scintillation or semi-conductor detectors. For internal monitoring, each laboratory employs a state-of-the-art low energy gamma radiation detection system in a shielded enclosure. These systems are designed to detect levels of uranium in the lungs at levels less than one billionth of a curie. In addition, other systems allow for the detection of higher energy, gamma radiation emitting fission products such as cesium-137 at roughly the same sensitivity as uranium-235. In addition to this type of internal exposure monitoring, personnel who work with certain forms of radioactivity are also required to submit periodic urine samples for extremely sensitive radionuclide analysis. Fecal analysis is also sometimes performed as discussed below. As a measure of the sensitivity of laboratory internal monitoring techniques, the systems used to measure radioactivity in urine and fecal samples are able to measure one ten-trillionth of a curie per liter for urine and one trillionth of a curie per gram for feces. The dose that corresponds to these levels is less than 0.015 rem to the lungs over the following year and 0.075 rem over a lifetime, when monitoring is conducted within 24 hours of a potential internal exposure event.

The laboratories require personnel to be internally monitored before initially assuming duties involving radiation exposure, upon terminating from such duties, and periodically in between. The frequency at which personnel are monitored is determined by their assigned duties. Those personnel who work with radioactive materials more often are monitored more frequently. In addition, like the prototype sites, any person who has radioactive contamination above the limit anywhere on his skin or who might have been exposed to airborne radioactivity above the limit is immediately monitored with the sensitive detector system; these individuals are also required to submit urine and fecal samples as appropriate for the radionuclides involved.

Internal monitoring equipment is calibrated and the calibration is checked each day the equipment is in use. This process involves checking the equipment's response to a known source of radiation. In addition, background checks are performed daily during equipment usage to further verify system performance.

Although internal monitoring is routinely performed at Naval Reactors' Department of Energy facilities, internal monitoring results are not used to control personnel radiation exposure below limits. Rather, work is engineered to prevent radioactivity from becoming internally deposited, and the monitoring is performed to verify that no radioactivity is present.

Results of Internal Monitoring in 1994

During 1994, about 3000 personnel were monitored for internally deposited radioactivity. No personnel had internally deposited radioactivity greater than the minimum detectable activity (MDA) as determined for each analysis as a result of operations at Naval Reactors' Department of Energy facilities.

EFFECTS OF RADIATION ON PERSONNEL

Control of radiation exposure at the Naval Reactors' Department of Energy facilities has always been based on the assumption that any exposure, no matter how small, may involve some risk; however, exposure within the accepted exposure limits represents a risk small compared with normal hazards of life. The basis for this statement is presented below.

Exposure to Radiation May Involve Some Risk

Since the inception of nuclear power, scientists have cautioned that exposure to ionizing radiation in addition to that from natural background may involve some risk. The U. S. National Committee on Radiation Protection and Measurements in 1954 (ref 1) and the International Commission on Radiological Protection in 1958 (ref 2) both recommended that exposures should be kept as low as practicable and that unnecessary exposure should be avoided to minimize this risk. The International Commission on Radiological Protection in 1962 (ref 14) explained the assumed risk as follows:

> "The basis of the Commission's recommendations is that any exposure to radiation may carry some risk. The assumption has been made that, down to the lowest levels of dose, the risk of inducing disease or disability in an individual increases with the dose accumulated by the individual, but is small even at the maximum permissible levels recommended for occupational exposure."

The National Academy of Sciences-National Research Council Advisory Committee on the Biological Effects of Ionizing Radiations included similar statements in its reports in the 1956-1961 period and most recently in 1990 (ref 15). In 1960, the Federal Radiation Council stated (ref 4) that its radiation protection guidance did not differ substantially from recommendations of the National Committee on Radiation Protection and Measurements, the International Commission on Radiological Protection, and the National Academy of Sciences. This statement was again reaffirmed in 1987 (ref 9).

One conclusion from these reports is that radiation exposures to personnel should be minimized. This is not a new conclusion. It has been a major driving force of the Naval Reactors Program since its inception.

Radiation Exposure Comparisons

The success of the Naval Reactors' Department of Energy facilities in minimizing exposures to personnel can be evaluated by making some radiation exposure comparisons.

Annual Exposure

One important measure of personnel exposure is the amount of exposure an individual receives in a year. Tables 2 and 3 show that since 1979, no individual has received more than 2 rem in a year as a result of working at the Naval Reactors' Department of Energy facilities. Also, from Table 4 it can be seen that the average exposure per person monitored has remained essentially constant since 1979 at approximately 0.07 rem for prototype personnel and 0.02 rem for laboratory personnel; the overall average annual exposure is 0.06 rem. The following comparisons give perspective on these individual annual doses in comparison to Federal limits and other exposures:

- The maximum individual annual dose of 2 rem is less than the Federally allowed individual quarterly dose of 3 rem, and is less than one half the Federal annual limit of 5 rem.
- Although no person at the Naval Reactors' Department of Energy facilities has exceeded 2 rem in a year since 1979, annually between 800 and 7000 workers at NRC-licensed commercial nuclear-powered reactors have exceeded 2 rem in various years over this same period (ref 16).
- The average annual exposure of 0.06 rem is:
  - approximately one hundredth of the Federal annual limit of 5 rem.
  - slightly more than one third the average annual exposure of commercial nuclear power plant personnel (ref 16).
  - approximately one third the average annual exposure received by commercial airline flight crew personnel due to cosmic radiation (ref 17).

For additional perspective, the annual exposures for personnel at the Naval Reactors' Department of Energy facilities may also be compared to natural background and medical exposures:

- The maximum annual exposure of 2 rem is less than half the annual exposure from natural radioactivity in the soils in some places in the world, such as Tamil Nadu, India and Meaipe, Brazil (ref 18).
- The average annual exposure of 0.06 rem is:

  - approximately one fifth the average annual exposure to a member of the population in the U. S. from natural background radiation (ref 19).

  - approximately one half the exposure from common diagnostic medical x-ray procedures such as x-rays of the back (ref 20).

  - slightly less than the difference in the annual exposure due to natural background radiation between Denver, Colorado and Washington, D.C. (ref 19).

- The average annual exposure of 0.02 rem for laboratory personnel is approximately equal to the monthly exposure to a member of the population in the U. S. from natural background radiation (ref 19).

Collective Dose

The sum of all individual exposures gives the collective dose. Collective dose may be used as a measure of the theoretical effect on the personnel occupationally exposed at the Naval Reactors' Department of Energy facilities taken as a group, and is an indicator of the effectiveness of the Program's efforts to minimize radiation exposure. From Tables 2 and 3, it can be seen that the collective dose received by all 6,364 personnel monitored at the Naval Reactors' Department of Energy facilities in 1994 was 266 man-rem. The following comparisons give perspective on this collective dose in comparison to collective doses from other occupations. This annual collective dose is:

- about one quarter the average annual collective dose to a comparable number of commercial nuclear power plant personnel (ref 16).

- significantly less than the average annual collective dose to a comparable number of persons in the medical field (ref 17).

- approximately one quarter the average annual collective dose to a comparable number of commercial airline flight crew personnel (ref 17).

For even further perspective, the annual collective dose to personnel at the Naval Reactors' Department of Energy facilities may also be compared to collective doses from radiation exposures not related to an individual's occupation. This annual collective dose is:

- approximately one seventh the average annual collective dose of 1,900 man-rem to a comparable number of individuals in the U. S. population due to natural background radiation (ref 19).

- approximately one third the average annual collective dose of 800 man-rem to a comparable number of individuals in the U. S. population due to diagnostic medical procedures such as x-rays of the back (ref 20).

- approximately one thirtieth the collective dose of 8,300 man-rem to a comparable number of average smokers due to the natural radioactivity in tobacco smoke (ref 10) (rough comparison due to difficulty in estimating effective dose from smoking).

Conclusions on Radiation Exposure to Personnel

From the preceding comparisons, it is concluded that occupational exposures to individuals working at the Naval Reactors' Department of Energy facilities are small when compared to occupational exposures and limits, and are within the range of exposures from natural background radiation in the U. S. and in the world. Additionally, the total dose to all persons (collective dose) each year is small compared to the collective doses to workers in other occupations and in the general U. S. population from natural background radiation, medical procedures, and tobacco smoke. In reference 17 the National Council on Radiation Protection and Measurements reviewed the exposures to the U. S. working population from occupational exposures. This included a review of the occupational exposures to personnel from the Naval Nuclear Propulsion Program. Based on this review, the National Council on Radiation Protection and Measurements concluded:

> "These small values (of occupational exposure) reflect the success of the Navy's efforts to keep doses as low as reasonably achievable (ALARA)."

The same success achieved by the Naval Nuclear Propulsion Program for occupational radiation exposure to Navy personnel has also been achieved for the personnel at the Naval Reactors' Department of Energy facilities.

Studies of the Effects of Radiation on Humans

Observations on the biological effects of ionizing radiation began to be made soon after the discovery of x-rays in 1895 (ref 15).

Numerous references are made in the early literature concerning the potential biological effects of exposure to ionizing radiation. These effects have been intensively investigated for many years (ref 21). Although there still exists some uncertainty about the exact level of risk, the National Academy of Sciences has stated: "It is fair to say that we have more scientific evidence on the hazards of ionizing radiation than on most, if not all, other environmental agents that affect the general public" (ref 22). A large amount of experimental evidence of radiation effects on living systems has come from laboratory studies on cell systems and on animals. However, the thing that sets our extensive knowledge of radiation effects on humans apart from other hazards is the evidence that has been obtained from studies of human populations that have been exposed to radiation in various ways (ref 22). The health effects demonstrated from studies of people exposed to high doses of radiation (that is, significantly higher than current occupational limits) include the induction of cancer, cataracts, sterility, and developmental abnormalities from prenatal exposure. Animal studies have also documented the potential for genetic effects.

Near the end of 1993, the Secretary of Energy requested the disclosure of all records and information on radiation experiments involving human subjects performed or supported by the Department of Energy or predecessor agencies. The Naval Reactors Program has never conducted or supported any radiation experiments on humans. As discussed in this report, the Program has adopted exposure limits recommended by national and international radiation protection standards committees, such as the National Council on Radiation Protection and Measurements and the International Commission on Radiological Protection, and has relied upon conservative designs and disciplined operating and maintenance practices to minimize radiation exposure to levels well below these limits.

High Dose Studies

The human study populations which have contributed a large amount of information about the biological effects of radiation exposure include the survivors of the atomic bombings of Hiroshima and Nagasaki, x-rayed tuberculosis patients, victims of various radiation accidents, patients that have received radiation treatment for a variety of diseases, radium dial painters, and inhabitants of South Pacific islands that received unexpected doses from fallout due to early nuclear weapons tests. All of these populations received high or very high exposures.

The studies of atomic bomb survivors have provided the single most important source of information on the immediate and delayed effects of whole body exposure to ionizing radiation. The studies have been supported for over 40 years by the U. S. and Japanese governments and include analysis of the health of more than 100,000 survivors of the bombings. Continued follow-up of the Japanese survivors has changed the emphasis of concern from genetic effects to the induction of cancer (ref 23).

The induction of cancer has been the major late effect of radiation exposure in the atomic bomb survivors. The tissues most sensitive to the induction of cancer appear to be the bone marrow, thyroid, and female breast. Other cancers linked to radiation, but with a lower sensitivity, include cancers of the lung, stomach, colon, bladder, and esophagus. A wave-like pattern of leukemia induction was seen over time beginning approximately two years after exposure, peaking within 10 years of exposure and diminishing to near baseline levels after 30 years. For other cancers, a statistically significant excess was observed ten or more years after exposure, and the excess risk continues to rise slowly with time (ref 24).

While it is often stated that radiation causes all forms of cancer, many forms of cancer actually show no increase among atomic bomb survivors. These include chronic lymphocytic leukemia, Hodgkin's disease, and cancers of the liver, pancreas, prostate, and testes (ref 23).

To understand the impact of cancer induction from the atomic bombings, it is necessary to compare the number of radiation-related cancers to the total number of cancers expected in the exposed group. In a study sub-group of over 40,000 survivors with doses in the range of 1 rem to 400 rem from the bombings, 3,435 had died from cancer by 1985. Of these, 340 cancer deaths are attributed to radiation exposure (ref 24). At doses below 20 rem, the Japanese data have not revealed a statistically significant excess of cancer (ref 18). The cancer mortality experience of the other human study populations exposed to high doses referenced above is generally consistent with the experience of the Japanese atomic bomb survivors (ref 15).

About 30 years ago the major concern of the effects from radiation exposure centered on possible genetic changes. Ionizing radiation at very high doses was known to cause such effects in many species of plants and animals. However, intense study of nearly 70,000 off-spring of atomic bomb survivors has failed to identify any increase in genetic effects. Based on a recent analysis, humans now appear less sensitive to the genetic effects from radiation exposure than previously thought (ref 23).

Radiation induced cataracts have been observed in atomic bomb survivors and persons treated with very high doses of x-rays to the eye. Approximately 20 years ago, potential cataract induction was considered a matter of concern. However, more recent research indicates the induction of cataracts by radiation is considered to require a high threshold dose. The National Academy of Sciences has stated the threshold for a vision-impairing cataract under conditions of protracted exposure is thought to be no less than 800 rem, which greatly exceeds the amount of radiation that can be accumulated by the lens through occupational exposure to radiation under normal working conditions (ref 15).

Radiation damage to the reproduction cells at very high doses has been observed to result in sterility. Impairment of fertility requires a dose large enough to damage or deplete most of the reproductive cells and is close to a lethal dose if exposure is to the whole body. The National Academy of Sciences estimates the threshold dose necessary to induce sterility is approximately 350 rem, or more, in a single dose (ref 15). As in the case of cataract induction, this dose far exceeds the dose that can be received from occupational exposure under normal working conditions.

Developmental abnormalities were observed among children of the atomic bomb survivors that received high prenatal exposure (that is, their mothers were pregnant at the time of the exposure). These abnormalities included stunted growth, small head size, and mental retardation. Additionally, recent analysis suggests that during a certain stage of development (the 8th to 15th week of pregnancy) the developing brain appears to be especially sensitive to radiation. A slight lowering of IQ might follow doses of 10 rem or more (ref 15).

From this discussion of the health effects observed in studies of human populations exposed to high doses of radiation, it can be seen that the most important of the effects from the standpoint of occupationally exposed workers is the potential for induction of cancer (ref 15).

Low Dose Studies

The cancer causing effects of radiation on the bone marrow, female breast, thyroid, lung, stomach and other organs reported for the atomic bomb survivors are similar to findings reported for other irradiated human populations. With few exceptions, however, the effects have been observed only at high doses and high dose rates. Studies of populations chronically exposed to low-level radiation have not shown consistent or conclusive evidence of an associated increase in the risk of cancer (ref 15). Attempts to observe increased cancer in a human population exposed to low doses of radiation have been difficult.

One problem in such studies is the number of people needed to provide sufficient statistics. As the dose to the exposed group decreases, the number of people needed to detect an increase in cancer goes up at an accelerated rate. For example, for a group exposed to 1 rem (equivalent to the average lifetime accumulated dose for an individual working at a Naval Reactors' Department of Energy facility) it would take more than 500,000 people in order to detect an excess in lung cancers based on current estimates of the risk (ref 25). This is more than three times the number of persons that have performed radioactive work at all of the Naval Reactors' Department of Energy facilities over the last four decades. Another limiting factor is the relatively short time since low dose occupational exposure started being received by large groups of people. As discussed previously, data from the atomic bomb survivors indicates a long latency period between the time of exposure and expression of the disease.

There is also the compounding factor that cancer is a generalization for a group of approximately 300 separate diseases, many being relatively rare and having different apparent causes. It is difficult to analyze low dose study data to eliminate the possibility that some factor other than radiation may be causing an apparent increase in cancer induction. This difficulty is particularly apparent in studies of lung cancer, for example, where smoking is such a common exposure, is poorly documented as to individual habits, and is by far the primary cause of lung cancer. Because cancer induction is statistical in nature, low dose studies are limited by the fact that an apparent observed small increase in a cancer may be due to chance alone.

Despite the above mentioned problems, and the lack of consistent or conclusive evidence from such studies to date, low dose studies fulfill an important function. They are the only means available for eventually testing the validity of current risk estimates derived from data accumulated at higher doses and higher dose rates.

Low dose groups that have been, and are currently being, studied include groups exposed as a result of medical procedures; exposed to fallout from nuclear weapons testing; living near nuclear installations; living in areas of high natural background radiation; and occupationally exposed to low doses of radiation. The National Academy of Sciences has reviewed a number of the low dose studies in references 15 and 22. Their overall conclusion from reviewing these studies was:

> "Studies of populations chronically exposed to low-level radiation, such as those residing in regions of elevated natural background radiation, have not shown consistent or conclusive evidence of an associated increase in the risk of cancer." (ref 15)

This conclusion has been supported by studies that have been completed since reference 15 was published. For example in 1990, the National Cancer Institute completed a study of cancer in populations living near 62 nuclear facilities in the U.S. that had been in operation prior to 1982. This study included commercial nuclear power plants and Department of Energy facilities involved in activities employing radioactive materials. The conclusion of the National Cancer Institute study was:

> "There was no evidence to suggest that the occurrence of leukemia or any other form of cancer was generally higher in the (counties near the nuclear facilities) than in the (counties remote from nuclear facilities)." (ref 26)

At the request of the Three Mile Island Public Health Fund, an investigation was performed by independent researchers of whether or not the pattern of cancer in the 10-mile area surrounding the Three Mile Island (TMI) nuclear plant had changed after the TMI-2 accident in March 1979 and, if so, whether the change was related to radiation releases from the plant. A conclusion of this study was:

> "For accident emissions, the authors failed to find definite effects of exposure on the cancer types and population subgroups thought to be most susceptible to radiation. No associations were seen for leukemia in adults or for childhood cancers as a group." (ref 27)

Of particular interest to workers at the Naval Reactors' Department of Energy facilities are studies of groups occupationally exposed to radiation. A recent survey of radiation worker populations in the U. S. shows there are about 350,000 workers currently under study (ref 25). For more than a decade, Naval Reactors Program personnel have been included among populations being studied. These studies are discussed below.

In 1978, Congress directed the National Institute for Occupational Safety and Health (NIOSH) to perform a study of workers at the Portsmouth Naval Shipyard (PNS). Congress also chartered an independent oversight committee of nine national experts to oversee the performance of the study in order to assure technical adequacy and independence of the results. NIOSH concluded that "excesses of deaths due to malignant neoplasms and specifically due to neoplasms of the blood and blood-forming tissue, were not evident in civilian workers at PNS" (ref 28). NIOSH did two follow-up studies focusing on leukemia and lung cancer and also concluded that radiation exposure at the Shipyard could not be shown to have contributed to the number of deaths from these causes (refs 29 and 30).

In 1991, researchers from the Johns Hopkins University, Baltimore, Maryland, completed a more comprehensive epidemiological study of the health of workers at the six Navy shipyards (including Portsmouth Naval Shipyard, discussed above) and two private shipyards that service the Navy's nuclear-powered ships (ref 31). This independent study evaluated a population of 70,730 civilian workers over a period from 1957, beginning with the first overhaul of the first nuclear-powered submarine, USS

NAUTILUS, through 1981, to determine whether there was an excess risk of leukemia or other cancers associated with exposure to low levels of gamma radiation. This study is of particular interest to workers at the Naval Reactors' Department of Energy facilities because the type of radioactivity, level of exposure, and method of radiological controls at these shipyards are similar to the Naval Reactors' Department of Energy facilities.

This study did not show any cancer risks linked to radiation exposure. Furthermore, the overall death rate among radiation-exposed shipyard workers was less than the death rate for the general U. S. population. It is well recognized that many worker populations have lower mortality rates than the general population, because the workers must be healthy to perform their work. This study shows that the radiation-exposed shipyard population falls in this category.

The death rate for cancer and leukemia among the radiation-exposed workers was slightly lower than that for non-radiation-exposed workers and that for the general U. S. population. However, an increased rate of mesothelioma, a type of respiratory system cancer linked to asbestos exposure, was found in both radiation-exposed and non-radiation-exposed shipyard workers, although the number of cases was small reflecting the rarity of this disease in the general population. The researchers suspect that shipyard worker exposure to asbestos in the early years of the Program, when the hazards associated with asbestos were not as well understood as they are today, might account for this increase.

In conclusion, the Johns Hopkins study found no evidence to conclude that the health of people involved in work on U. S. nuclear-powered ships has been adversely affected by exposure to low levels of radiation incidental to this work. The average annual radiation exposure for these shipyard workers is about two times higher than the exposure received by personnel assigned to Naval Reactors nuclear propulsion prototype sites and eight times higher than the exposure received by personnel at the Naval Reactors laboratories. Additional studies are planned to investigate the observations and update the shipyard study with data beyond 1981.

In 1978, the Department of Energy contracted with the Oak Ridge Associated Universities to perform a study of workers who were occupationally exposed to greater than five rem in a single year between 1947 and 1978. A group of about 3200 individuals was identified, including workers at 31 Department of Energy facilities (including six Naval Reactors' Department of Energy facilities) and seven Naval Reactors Program shipyards. Although a final report of this study has not yet been published, preliminary findings show mortality rates lower than those for the general population. This lower rate is probably a result of the "healthy worker effect" (described above with respect to the study performed by The Johns Hopkins University) and the low average age of the study group (58 years old at the time of reporting). Later phases of the study will compare the greater than five rem group to a similar worker group to assess whether the additional radiation exposure has had any impact on the mortality rate (ref 32).

In 1994, NIOSH began conducting an epidemiological study of the health of workers at the Idaho National Engineering Laboratory (INEL) who are occupationally exposed to radiation. This study includes civilian workers at the Naval Reactors Facility (NRF), which is located within INEL. This study is ongoing.

Numerical Estimates of Risk from Radiation

One of the major aims of the studies of exposed populations as discussed above is to develop numerical estimates of the risk of radiation exposure. These risk estimates are useful in addressing the question of how hazardous radiation exposure is, evaluating and setting radiation protection standards, and helping resolve claims for compensation by exposed individuals.

The development of numerical risk estimates has many uncertainties. As discussed above, excess cancers attributed to radiation exposure can only be observed in populations exposed to high doses and high dose rates. However, the risk estimates are needed for use in evaluating exposures from low doses and low dose rates. Therefore, the risk estimates derived from the high dose studies must be extrapolated to low doses. This extrapolation introduces a major uncertainty. The shape of the curve used to perform this extrapolation becomes a matter of hypothesis (that is, assumption) rather than observation. The inability to observe the shape of this extrapolated curve is a major source of controversy over the appropriate risk estimate.

Scientific committees, such as the National Academy of Sciences-National Research Council Advisory Committee on the Biological Effects of Ionizing Radiations (ref 15), the United Nations Scientific Committee on the Effects of Atomic Radiation (ref 18), and the National Council on Radiation Protection and Measurements (ref 11) all conclude that accumulation of dose over weeks, or months, as opposed to in a single dose, is expected to reduce the risk appreciably. A dose rate effectiveness factor (DREF) is applied as a divisor to the risk estimates at high doses to permit extrapolation to low doses. The National Academy of Sciences (ref 15) suggested that a range of DREF's between 2 and 10 may be applicable and reported a best estimate of 4 based on laboratory animal studies. However, despite these conclusions by the scientific committees, some critics argue that the risk actually increases at low doses while others argue that cancer induction is a threshold effect and the risk is zero below the threshold dose. As stated at the beginning of this section, the Naval Reactors Program has always conservatively assumed radiation exposure, no matter how small, may involve some risk.

In 1972, both the United Nations Scientific Committee on the Effects of Atomic Radiation and the National Academy of Sciences-National Research Council Advisory Committee on the Biological Effects of Ionizing Radiations issued reports (refs 33 and 34) which estimated numerical risks for specific types of cancer from radiation exposures to humans. Since then, national and international scientific committees have been periodically reevaluating and revising these numerical estimates based on the latest data and information. The most recent risk estimates are from the same two committees and are contained in their 1988 and 1990 reports, respectively (refs 18 and 15). In these reports, both committees provided risk estimates which were larger than the risk estimates in their previous reports. This increase in the new estimates was due to the use of new models for projecting the risk into the future, revised dose estimates for survivors of the Hiroshima and Nagasaki atomic bombs, and additional data on the cancer experience by both atomic bomb survivors and persons exposed to radiation for medical purposes. A risk estimate for radiation-induced cancer derived from the most recent analyses, references 15 and 18, can be briefly summarized as follows:

> In a group of 10,000 workers in the U. S., a total of about 2,000 (20 percent) will normally die of cancer. If each of the 10,000 received over his or her career an additional one rem, then an estimated 4 additional cancer deaths (0.04 percent) might occur. Therefore, the average worker's lifetime risk of cancer has been increased nominally from 20 percent to 20.04 percent.

The above risk estimate was extrapolated from estimates applicable to high doses and dose rates using a DREF of about 2. This estimate probably overstates the true lifetime risk at low doses and dose rates, because a DREF of 2 is at the low end of probable DREF values. The National Academy of Sciences (ref 15), in assessing the various sources of uncertainty, concluded that the true lifetime risk may be contained within an interval which extends from zero to about a factor of three higher than the above. The Academy points out that the lower limit of uncertainty extends to zero risk, "as the possibility that there may be no risks from exposures comparable to external natural background radiation cannot be ruled out."

These statistics can be used to develop a risk estimate for personnel exposed to radiation associated with Naval Reactors' Department of Energy facilities. As stated previously, the average lifetime accumulated exposure for these personnel is about one rem. Therefore, based on the risk estimate presented above, the average worker's lifetime cancer risk at the Naval

Reactors' Department of Energy facilities may be statistically increased by about four one-hundredths of one percent, or from 20 percent for the general population to 20.04 percent for a worker at the Naval Reactors' Department of Energy facilities.

Risk Comparisons

Table 6 compares calculated risks from occupational exposure at the Naval Reactors' Department of Energy facilities to other occupational risks. This permits evaluation of the relative hazard of this risk versus risks normally accepted in the workplace. It should be kept in mind that the radiation risk is calculated based on risk estimates, whereas the other occupational risks are based on actual death statistics for the occupation.

TABLE 6

LIFETIME OCCUPATIONAL RISKS

Occupation (ref 11)	Lifetime Risk[1] Percent
Mining, quarrying	2.8
Agriculture	2.2
Construction	1.8
Transportation and Public Utilities	1.3
All Industries Average	0.5
Government	0.4
Services	0.3
Manufacturing	0.3
Trade	0.2
Radiation exposure associated with Naval Reactors' Department of Energy facilities (risk estimate)	0.04

Further perspective on the lifetime risk from radiation exposure at the Naval Reactors' Department of Energy facilities may be gained by comparison to other everyday risks as shown in Table 7.

---

[1] Assumes working from age 18 to 65 (47 years).

TABLE 7

SOME COMMONPLACE LIFETIME RISKS

Risk (ref 35)	Lifetime Risk[1] Percent
Smoking	12
Motor Vehicle Accidents	1.3
Home Accidents	0.79
Falls	0.45
Drowning	0.26
Fires	0.20
Accidental Poisoning	0.10
Firearms	0.07
Electrocution	0.04
Radiation exposure associated with Naval Reactors' Department of Energy facilities (risk estimate)	0.04

Low-Level Radiation Controversy

In low-level radiation, as in other areas, a very effective way to frighten people is to claim that no one knows what the effects are. This has been repeated so often that it has almost become an article of faith that no one knows the effects of low-level radiation on humans. The critics are able to make this statement because, as discussed above, human studies of low-level radiation exposure are unable to be conclusive as to whether or not an effect exists in the exposed groups, because of the extremely low incidence of an effect. Therefore, assumptions are needed regarding extrapolation from high dose groups. The reason low dose studies are not able to be conclusive is because the risk, if it exists at these low levels, is too small to be seen in the presence of all the other risks of life.

The fact that a controversy exists is evidence that the radiation risk is small.

In summary, the effect of radiation exposures at occupational levels is extremely small. There are physical limits to how far scientists can go to ascertain precisely the size of this risk, but it is known to be small. Instead of proclaiming how little is known about low-level radiation, it is more appropriate to emphasize how much is known about the small actual effects.

---

[1] Smoking assumes at risk from age 32 to 72 (40 years) and Motor Vehicle Accidents assume at risk from age 18 to 72 (54 years). Other risks assume at risk for lifetime (72 years).

Conclusions on the Effects of Radiation on Personnel

This perspective provides a better position to answer the question, "Is radiation safe?". If safe means zero effect, then the conclusion would have to be that radiation may be unsafe. But to be consistent, background radiation and medical radiation would also have to be considered unsafe. Or more simply, being alive is unsafe.

"Safe" is a relative term. Comparisons are necessary for actual meaning. For a worker, safe means the risk is small compared to other risks accepted in normal work activities. Aside from work, safe means the risk is small compared to the risks routinely accepted in life.

Each recommendation on limits for radiation exposure from the scientific and advisory organizations referenced herein has emphasized the need to minimize radiation exposure. Thus, the Naval Reactors Program is committed to keeping radiation exposure to personnel as low as reasonably achievable. No level of radiation exposure has been identified for which responsible organizations have agreed there is no effect. Similarly, it is difficult to find a single activity of man for which one can confidently state the risk is zero. However, the above summaries show that the risk from radiation exposure associated with the Naval Reactors' Department of Energy facilities is low compared to the risks normally accepted in industrial work and in daily life outside of work.

CLAIMS FOR RADIATION INJURY TO PERSONNEL

Personnel who consider they have received an occupational injury may file claims. The personnel who operate the Naval Reactors' Department of Energy facilities are employees of corporations operating facilities under contract to the Department of Energy. These personnel file claims under state workmen's compensation laws. The claim may be handled through the contractor's insurance carrier or adjudicated by an administrative law judge. Either the employee or the contractor may appeal the judge's decision.

A case does not require a decision subsequent to filing unless it is actively pursued. A claim may lie dormant for many years theoretically to be pursued at a later date, whereupon a decision will be made. For the purpose of this report, claims which have had no activity in the last five years are counted as deferred.

There have been a total of five claims filed for injury from radiation associated with Naval Reactors' Department of Energy facilities. Of these claims, one was awarded and four have either been denied or deferred. The one case that was awarded occurred in 1955 and involved loss of hearing. A fine particle of radioactive material had entered the individual's ear canal and became lodged. The particle remained in the ear canal for approximately nine days; as a result, the individual received a very high localized exposure to the ear drum. Following this incident, the individual suffered a 65 percent hearing loss in the affected ear. The claim was awarded in 1959.

AUDITS AND REVIEWS

Checks and cross-checks, audits, and inspections of numerous kinds have been shown to be essential in maintaining high standards of radiological controls. First, each worker is specially trained in radiological controls as it relates to his own job. Second, written procedures exist which require verbatim compliance. Third, radiological controls technicians and their supervisors oversee radioactive work. Fourth, personnel independent of radiological controls technicians are responsible for processing personnel dosimeters and maintaining radiation exposure records.

Fifth, a strong independent audit program is required covering all radiological controls requirements. In all facilities this radiological audit group is independent of the radiological controls organization and its findings are reported regularly to senior management. This group performs continuing surveillance of radioactive work. It conducts in-depth audits of specific areas of radiological controls. This group checks all radiological controls requirements at least annually.

Sixth, the U. S. Department of Energy assigns to each facility a representative who reports to the Director of the Naval Nuclear Propulsion Program at headquarters. One assistant to this representative is assigned full time to audit and review radiological controls. Seventh, Office of Naval Reactors headquarters personnel conduct periodic inspections of radiological controls in each facility.

In addition, various aspects of the Naval Reactors Program have been reviewed by other Government agencies. For example, the General Accounting Office (GAO) performed a fourteen month in-depth review of various aspects of the Naval Reactors' Department of Energy facilities. The GAO published the results of its evaluation in August 1991 (ref 36) which stated the following conclusions:

- "We believe Naval Reactors Laboratories are accurately measuring, recording, and reporting radiation exposures."
- "Naval Reactors reported exposures show that exposures have been minimal and overall are lower than commercial nuclear facilities and other DOE facilities."

ABNORMAL OCCURRENCES

It is a fact of human nature that people make mistakes. The key to a good radiological controls program is to find the mistakes while they are small and prevent the combinations of mistakes that lead to more serious consequences. The preceding section on inspections supports the conclusion that the Naval Reactors Program gives more attention to errors and their prevention than to any other single subject. Requiring constant focus on improving performance of radiological work has proven effective in reducing errors.

In addition, radiological controls technicians are authorized and required to stop anyone performing work in a manner which could lead to radiological deficiencies. One definition of "deficiency" is a failure to follow a written procedure verbatim. However, the broadest interpretation of the term "deficiency" is used in the Naval Reactors' Department of Energy facilities' radiological controls program. Anything involved with radiation or radioactivity which could have been done better is also considered a radiological deficiency.

Radiological deficiencies receive management attention. There is a higher level of deficiency that is defined as a radiological incident. Incidents receive further management review, including evaluation by senior personnel at the Office of Naval Reactors headquarters and review by the Director of the Naval Nuclear Propulsion Program. Improvement programs over the years have consistently aimed at reducing the numbers of radiological incidents. As improvements occurred, the definition of what constitutes a Naval Reactors incident was changed to define smaller deficiencies as incidents. These changes were made so that the incident reporting system would continue to play a key role in upgrading radiological controls. As a result, it is not practicable to measure performance over time merely by counting numbers of radiological incidents or deficiencies.

The Department of Energy and its predecessors have used a separate reporting system that has been nearly constant over time and therefore can be used as a basis for comparison. This system defines a Type A radiation exposure occurrence as an event which causes an individual's external radiation exposure to exceed 25 rem in one incident or one year (ref 37). The Nuclear Regulatory Commission uses a similar criteria to define a radiation related abnormal occurrence; abnormal occurrences are included in the NRC's quarterly report to Congress. The Office of Naval Reactors regularly evaluates radiological events using these criteria for comparison.

Since the beginning of operations at the Naval Reactors' Department of Energy facilities, there has not been a single radiation incident which met the criteria of a Type A or abnormal occurrence.

The policy of the Naval Reactors Program is to provide for close cooperation and effective communication with state radiological officials involving occurrences that might cause concern because of radiological effects associated with Program facilities. The Naval Reactors Program has reviewed radiological matters with state radiological officials in the states where Naval Reactors' Department of Energy facilities operate. Although there has never been an abnormal occurrence which has resulted in radiological effects to the public outside these facilities or which resulted in radiological injury to residents of the states working inside these facilities, states were notified when inquiries showed public interest in the possibility such events had occurred.

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OCCUPATIONAL SAFETY, HEALTH, AND OCCUPATIONAL MEDICINE REPORT

DEPARTMENT OF ENERGY
UNITED STATES OF AMERICA

NAVAL NUCLEAR PROPULSION PROGRAM
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OCCUPATIONAL SAFETY, HEALTH AND OCCUPATIONAL MEDICINE REPORT

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SUMMARY

The Naval Reactors Program is a joint Department of Energy (DOE)/Department of the Navy Program with central control by a single headquarters organization. The Program is responsible for two DOE laboratories, three other DOE Sites which have prototype Naval nuclear propulsion plants (one of these sites also operates the Expended Core Facility), and one Naval training facility (Moored Training Ship Facility) which has nuclear powered ships devoted to training.

The Naval Reactors Program faces the unique challenge of coherently integrating and managing DOE testing and Navy training responsibilities, DOE and Navy facilities, civilian and military personnel, and DOE and Navy health and safety standards. Successful integration requires special technical knowledge and experience in selecting and implementing standards which ensure the safe training of Navy personnel in a realistic environment.

The same principles of personal responsibility, technical knowledge, rigorous training, and auditing that have been applied to achieve the Naval Reactors Program strong nuclear safety record are applied to Occupational Safety, Health, and Occupational Medical (OSHOM) programs. A multi-tier, defense in depth approach which incorporates safety in all levels of work is used throughout the Program. Primary responsibility for employee safety and health resides with operations management and the workers themselves, with assistance and oversight from industrial hygiene, safety, and medical professionals. Workers undergo safety and health training and work to written requirements. Inspection and feedback systems are designed to provide continuous improvement.

This annual report describes the non-radiological aspects of OSHOM programs at Naval Reactors DOE laboratory and prototype training facilities and the Moored Training Ship Facility. Included in this report are performance indicators which measure the effectiveness of OSHOM programs. Performance indicators, such as injury and illness incidence rates and lost workdays, are provided for a five year period through 1994 in Figures 1-3. When these indicators are compared for the Naval Reactors Program, DOE, and general industry, it can be seen that the Program has maintained rates less than one third the incidence rates of general industry in all categories and is substantially below DOE incidence rates.

A fourteen month comprehensive assessment of the Program's environmental, safety, and health practices was conducted by the General Accounting Office (GAO) in 1990-1991. The GAO reported that there were "no significant deficiencies." Such a finding provides independent evidence that the Naval Reactors Program is providing a safe and healthy workplace while meeting the challenges of integrating civilian and military standards in a unique research and training environment.

NAVAL REACTORS PROGRAM BACKGROUND, MISSION, AND FACILITIES

Background

The Naval Reactors Program (hereafter referred to as "the Program") is comprised of military personnel and civilians who design, build, operate, maintain, and manage the nuclear-powered ships and facilities which support the U.S. nuclear-powered Naval fleet. The Program has a broad reach, maintaining responsibility for nuclear propulsion matters from cradle-to-grave. Program responsibilities are delineated in Presidential Executive Order 12344 of February 1, 1982, and Public Law 98-525 of October 19, 1984 (42 USC 7158). These responsibilities encompass:

- The Navy's nuclear-powered warships;
- Two research and development laboratories;
- Contractors responsible for the design, procurement, and construction of propulsion plant equipment;
- Shipyards that construct, overhaul, and service the propulsion plants of nuclear-powered vessels;
- Navy support facilities and tenders;
- Nuclear power schools and Naval Reactors training facilities; and
- The Naval Nuclear Propulsion Program Headquarters organization and field offices.

The Government-owned, contractor-operated Bettis and Knolls Atomic Power Laboratories are research and development laboratories devoted solely to Naval nuclear propulsion work. With combined staffs of approximately 6000 engineers, scientists, technicians, and support personnel, their mission is to develop the most advanced Naval nuclear propulsion technology and to provide technical support for the continued safe, reliable operation of all existing Naval reactors.

The laboratories operate land based prototype nuclear propulsion plants in Connecticut (now shut down), New York, and Idaho. These prototype facilities provide platforms for the operational testing of new designs and promising new technologies under typical operating conditions prior to introduction into the fleet. The prototype facilities also support the unique training requirements of the Program and are staffed by highly qualified instructors. These facilities provide for hands-on training so that, prior to their first sea tour, every operator has qualified on an operating nuclear reactor.

To augment its hands-on training resources, the Program established the Moored Training Ship Facility at the Naval Weapons Station in Charleston, South Carolina in 1990. Two nuclear-powered submarines which have been decommissioned and converted for training are moored at the facility. Navy personnel operate the facility with the assistance of a technical staff from one of the Program's research and development laboratories.

Scope of Report

The Program is solely responsible for OSHOM matters at its DOE laboratories and prototype training facilities which are operated exclusively for the Program. Within the Navy Occupational Safety and Health (NAVOSH) Program, the Naval Reactors Program is responsible for OSHOM matters at the Moored Training Ship Facility. Non-radiological OSHOM matters at other Navy facilities (e.g. shipyards or support facilities) are the primary responsibility of other Navy organizations (the Program often works with these organizations on OSHOM matters which could affect Naval nuclear propulsion plant operations). Therefore, this report focuses on the OSHOM programs at Program laboratories and their associated prototype training facilities and the Moored Training Ship Facility.

As stated in the summary, this report covers non-radiological OSHOM programs at Program facilities. The Program is also responsible for radiological health and safety at all Program DOE and Navy facilities and ships where Naval nuclear propulsion work is done. Radiological safety and health information for the Program is described in detail in two other reports which are publicly available (references 1 and 2).

This report covers calendar year 1994. Occupational safety and health data for calendar years 1990 through 1994 is included to allow comparison to Program performance in recent years.

Past Operations

Safety, Industrial Hygiene, and Occupational Medical programs were developed and implemented in the earliest years of the Program in the form of documented principles, practices, procedures, and facility safety manuals. The Atomic Energy Act of 1954 assigned to the Atomic Energy Commission (AEC), the predecessor to the DOE, responsibility for regulation of activities conducted pursuant to the Act to protect safety and health. Basic requirements were promulgated by the AEC Manual, part 0500 (Health and Safety), which established standards applicable to all AEC contractor operations. OSHOM programs were staffed with individuals dedicated to these functions.

Since passage of the Williams-Steiger Occupational Safety and Health Act of 1970 (OSH Act), the national standard of care for occupational safety and health has improved. Under the OSH Act, the Program retained authority for OSHOM programs of its contractors and has mandated proactive programs and practices which are at least as stringent as those required by the Occupational Safety and Health Administration for commercial facilities. The various contractor safety, industrial hygiene, and medical programs have been dynamic and have experienced substantial growth since their inception as new requirements have developed.

Militarily Unique Mission and Facilities

As previously stated, a major responsibility of the Program is to train Navy personnel to operate Naval nuclear propulsion plants. At the Moored Training Ship Facility, this training is conducted aboard specially modified, moored nuclear-powered submarines which have been decommissioned and converted for training. At two Naval Reactors Program DOE facilities, training of Naval personnel is conducted in land-based prototype Naval nuclear propulsion plants which are identical in design to the engineering spaces aboard Naval nuclear powered warships. Navy and contractor personnel, who meet the same qualification standards as Navy personnel, conduct the training.

Procedures used by the Program to operate the nuclear reactors and associated systems in the land-based prototype propulsion plants are identical to those used in warships. This includes the use of Navy shipboard occupational safety and health requirements consistent with those applied in the fleet. The Navy safety and health requirements are tailored to meet the militarily unique aspects of the "sea services" and combat roles of warships. This training of Navy personnel in settings and operations identical to those encountered at sea is a fundamental tenet of the Program which directly contributes to the safe operation of Navy shipboard reactors.

In implementing the OSH Act, Executive Order 12196 and 29 CFR 1960 recognized the unique equipment and operations utilized by the military and exempted militarily unique equipment and operations from coverage by OSH Act regulations. Heat stress, lock-out/tag-out procedures, and structural safety requirements (e.g., hand rails) are examples of areas where civilian OSHOM requirements must be reconciled with the configuration and operational requirements of militarily-unique equipment. For such equipment and operations, the Department of Defense occupational safety and health programs ensure that military personnel are protected.

POLICY AND IMPLEMENTATION

Naval Reactors Program Policy

It is the policy of the Naval Reactors Program to eliminate or control workplace hazards at Program facilities such that all employees are provided with a safe and healthful workplace.

OSHOM Program Elements

The control of hazards is accomplished through technical and managerial techniques which are recognized as industry standards. These techniques include:

- Establishment of responsibilities: All levels of management and supervision are assigned accountability for the safety and health of their workers and peers.

- Qualified Professional Staffing: The OSHOM programs at Program facilities include certified professionals in the disciplines of Occupational Safety, Industrial Hygiene, and Occupational Medicine. In addition, numerous other site personnel are assigned collateral OSHOM duties, such as workplace safety monitors.

- OSHOM Training of Management and Workers: Facility management, supervisors, and employees receive training which addresses policies and procedures, physical and chemical hazard recognition, control strategies and requirements, emergency procedures, and employee information/concern resolution processes.

- Planning: Work plans and specifications are reviewed by facility OSHOM professionals to proactively identify and eliminate or mitigate hazards.

- Emergency Planning: Emergency procedures are well documented. Emergency responders and supervisors must pass initial qualifications and routinely perform drills to maintain and improve their response skills. Trained personnel are available to provide at least first aid capability around the clock.

- Extension of OSHOM Program to Subcontractor Employees: Subcontractors performing work at Program facilities are required by contract to work to safety and health requirements as stringent as those implemented for Program facility employees. Subcontractor compliance with safety and health requirements is overseen by facility personnel.

- Written Requirements: Employees work to written requirements, such as manuals and procedures, which incorporate safety and health requirements.

- Routine, Independent OSHOM Evaluation: Naval Reactors headquarters and field office personnel as well as auditors in the facility's organization provide independent evaluation of OSHOM Programs. Assessments are detailed, formal, documented, and corrective actions are tracked to closure.

Hazard Assessment Systems

Methods of assessing hazards include:

- Baseline safety and industrial hygiene surveys;
- Routine self-inspection and self-appraisal programs;
- Hazard Analysis which evaluates potential hazards associated with certain job categories and/or specific tasks;
- Industrial hygiene monitoring programs that use state-of-the-art equipment and independent laboratory analysis in accordance with nationally recognized procedures;
- Accident investigation systems which ensure timely review, provide written reports, and ensure responsive actions are tracked to closure; and
- Preventive maintenance programs that ensure safety systems function as designed.

Worker Participation

Workers participate in various committees, internal programs, and site audits and inspections. Employee concerns are encouraged to be reported to management, OSHOM staff, or formally documented via an employee concern management system (reference 3). Employee/management communications include follow-up and tracking of identified employee concerns or issues identified during inspections, audits, or committee meetings.

OSHOM REQUIREMENTS

Naval Reactors Program Authority and Responsibility for Occupational Safety and Health

To ensure safe and healthful working conditions for the nation's workers, Congress passed the Occupational Safety and Health Act (OSH Act) of 1970. The OSH Act excludes from coverage activities which are regulated under separate statutory authority, such as the Atomic Energy Act. However, the head of each Federal agency (e.g., DOE) is responsible to establish and maintain an effective and comprehensive occupational safety and health program consistent with the OSH Act.

Within the DOE, authority to set and enforce OSHOM standards at Program facilities is assigned to the Deputy Assistant Secretary for the Office of Naval Reactors pursuant to the Atomic Energy Act of 1954, Executive Order 12344 and Public Law 98-525 (reference 4). These documents establish that the director of the Program is responsible for all matters pertaining to Naval nuclear propulsion including direction and oversight of safety and health matters for all Program facilities and activities.

Because of the OSH Act exclusion and the authority granted DOE, the Naval Reactors Program establishes and enforces OSHOM requirements at Naval Reactors DOE facilities independent of other DOE organizations (e.g., nuclear fuel and weapons production operations). With this authority, the Program ensures that OSHOM standards are applied with a consistent and sound technical basis at its facilities in accordance with the military training mission as discussed earlier.

Within the Navy, the authority to set and enforce OSHOM standards is assigned to the Assistant Secretary of the Navy (Installations and Environment). These standards are contained in OPNAV Instruction 5100.23 and OPNAV Instruction 5100.19 (references 5 and 6). The Program is responsible for the implementation of these Navy instructions at the Moored Training Ship Facility.

Health and Safety Standards Reference Document (HSSRD)

To facilitate a clear definition of applicable requirements and to accomplish the difficult task of integrating civilian and Navy requirements, the Program has developed the HSSRD. The HSSRD contains a listing of all OSHOM standards considered for implementation at Program facilities in each specific topical area of safety and health. The HSSRD contains a description of the primary elements of safety and health standards selected for implementation at each Program facility, along with traceability of those standards to federal regulations, DOE Orders, NAVOSH program requirements, or Program directives. This document is updated as necessary (at least annually) to ensure that the most current standards are applied to facility OSHOM programs.

Implementation of DOE Orders and Navy Occupational Safety and Health Program Requirements

The Naval Reactors Program utilizes DOE Orders in the setting of standards for its DOE facilities. Since DOE Orders are focused on non-military activities, some of the requirements may not be directly applicable to Program activities. Such requirements are modified by the Program as necessary to integrate the requirements with militarily-unique systems and operations to prevent potential conflicts with Navy training requirements and to maintain the prototypes' ship-like environment.

Because the Moored Training Ship Facility is a Naval facility, Navy occupational safety and health requirements are applied (references 5 and 6).

Occupational Medical Program Requirements

The Program occupational medical requirements for civilian DOE facility employees are consistent with the DOE's occupational medical requirements (reference 7). Occupational medical requirements applicable to Naval personnel at DOE facilities and to the Moored Training Ship Facility are those of the Navy (references 5 and 6).

PERSONNEL

Contractor Health and Safety Council

A Contractor Health and Safety Council, whose membership includes senior safety and health professionals from each Program facility, operates within the Program. The purposes of the Council are to (1) provide a forum in which experiences and information can be exchanged, and new safety and health initiatives can be identified and expeditiously implemented, and (2) maintain the HSSRD. These functions are accomplished by regular conferences of the Contractor Health and Safety Council. In addition, the Council meets annually with Program headquarters personnel to review performance and establish objectives for the coming year.

Professional Staffing

Adequate professional staffing is assigned to OSHOM programs to ensure a safe and healthful workplace at all Program facilities. All key professional occupational safety and health staff personnel satisfy, at a minimum, the requirements contained in the Office of Personnel Management standards for Safety and Occupational Health Manager, Safety Engineer, or Industrial Hygienist. Each Program activity is staffed by, or has contractual arrangements with, one or more physicians who are board-eligible occupational medicine physicians or physicians who are trained in occupational medicine.

Professional occupational safety and health personnel are qualified by their academic backgrounds and experience to perform workplace evaluations, technical monitoring, testing, consulting, and other essential functions of their professions. Involvement with professional organizations is supported and facility staff hold memberships in all major safety and industrial hygiene professional societies.

Professional staff hold certifications from the American Board of Industrial Hygiene and/or the Board of Certified Safety Professionals. Such certifications demonstrate that individuals so identified have shown, by successfully passing rigorous examinations, that they have special training, knowledge, and competence in industrial hygiene and/or safety.

The capabilities of all professional staff members are enhanced by attendance at professional technical society meetings, participation in continuing education programs at universities and other recognized training centers, and involvement with internal education and training programs developed by individual Program sites. These activities are designed to improve the safety and health professional's ability to anticipate and recognize potential workplace hazards; measure, analyze, and evaluate occupational safety and health trends; and define and implement effective controls.

OSHOM managers are individuals with education and experience which provides them with special qualifications to manage these programs. These managers report to the site manager (Commanding Officer at the Moored Training Ship Facility) through a management chain in a manner that maintains their independence from production concerns.

The occupational safety and health professionals at Program facilities perform workplace monitoring, evaluate workplace hazards, implement appropriate controls, review work procedures for proper safety controls, analyze safety and health performance indicators, and maintain appropriate records. In general, however, the safety and health staff is not directly involved in site operations unless specific safety issues arise. In such cases, the safety and health staff work with the facility operations staff and Navy personnel to resolve the issue.

Operations Personnel

First-level operations supervisors, such as work-area managers and supervisors, are given primary responsibility for the safety and health of their subordinates. Operations personnel implement standards and procedures developed by the facility safety and health professional staff. Operations personnel are provided general and job specific safety training to enable them to identify safety hazards and unsafe work practices.

Upper level operations management at Program facilities are also responsible for the safety and health of their personnel. They reinforce the importance of safety and health requirements by establishing applicable policies and objectives and assigning appropriate responsibility and authority to all levels of management and supervision.

Each operating facility also maintains a Safety Representative program in which an individual from a work area, such as a department, serves as a Safety Representative. The Safety Representatives are given additional training, attend periodic meetings, and are tasked with monitoring their work area to identify any hazards or unsafe work practices to facility OSHOM personnel.

Naval Reactors Field Office Representatives

All Program facilities have a co-located Naval Reactors field office. The field office is staffed with Naval Reactors personnel who report directly to headquarters and whose function is to ensure contractor compliance with Program requirements. The field office representatives provide independent oversight of facility operations and allow Naval Reactors headquarters to maintain close surveillance of events occurring at the facilities. Each field office has personnel with specific responsibilities in OSHOM matters to provide effective oversight of facility OSHOM programs.

Navy Personnel Assigned to Naval Reactors DOE Facilities

Active duty Navy personnel are assigned to Naval Reactors DOE prototype sites to conduct and receive training in the operation of Naval nuclear propulsion plants. The safety and health of these personnel is the overall responsibility of the Commanding Officer of the Nuclear Power Training Unit, which is located on-site. Each prototype plant has safety representatives who are responsible for ensuring that safety and health requirements are implemented. The safety representatives have access to, and work with the professional safety and health staff at the facility in the resolution of any OSHOM issues.

The Commanding Officer also maintains a liaison with a nearby Navy Branch Medical Clinic which provides occupational medical services to Navy personnel. The facility OSHOM personnel work with the affiliated Naval Branch Medical Clinic to ensure the safety and health of Navy personnel.

Emergency Response Capability

Each Program facility has emergency response capabilities for significant events. At each site, individuals with the appropriate education, training, and qualifications are assigned to respond to the scene of any emergency which may occur, evaluate the circumstances of the emergency, and initiate appropriate corrective actions. A separate site emergency control center is manned when necessary with specially trained personnel to handle a variety of emergencies.

Individuals are assigned to site emergency response teams on the basis of their expertise and experience. Emergency responders participate in frequent drills to improve their qualifications and skills. Major drills involving the entire site emergency response team are conducted periodically and smaller scale drills involving limited participation are conducted more frequently.

With regard to medical emergencies, each operating facility has qualified emergency medical personnel to provide emergency medical care. Most sites are also staffed with one or more medical doctors during day shifts. Additional groups of individuals (e.g., Emergency Medical Technicians) have been specifically trained and assigned to provide medical assistance. Each site has arrangements with a local hospital to provide emergency medical care beyond the capabilities of facility medical personnel.

HAZARD IDENTIFICATION AND ANALYSIS

Regulations, Requirements, and Technical Information

To maintain a current level of knowledge and expertise in this area, members of the occupational safety and health staff:

- Review the Federal Register and subscribe to review services to identify and determine the applicability of new or proposed regulations to Program facilities. The results of these reviews are disseminated to OSHOM and operations personnel.
- Review and incorporate into site procedures applicable safety and health requirements and lessons learned contained in DOE and Navy safety and health bulletins and other relevant documents.
- Maintain professional certification in the fields of Safety, Industrial Hygiene or Occupational Health Nursing.
- Participate in professional societies (e.g., the American Industrial Hygiene Association, and the American Association of Occupational Health Nurses) that provide information via publication of professional journals, national conferences, seminars, and society meetings.
- Discuss and resolve safety and health issues in the Naval Reactors Program Health and Safety Council conferences.

Project Evaluation

Facility projects involving work that could affect the safety and health of personnel are reviewed and evaluated by the respective facility safety and health organizations. These evaluations typically involve review of the work project from initial concept through the development of detailed work procedures or construction plans, and technical specifications. One of the primary functions of this conceptual review is to identify alternate methods or materials which can be employed to eliminate or reduce the hazards associated with the project under review. Safety and health personnel are required to concur that applicable safety and health concerns have been integrated into written work procedures and to ensure all applicable fire and life safety code requirements are satisfied.

The qualifications and work practices of subcontractors to perform specific facility project work are evaluated by safety and health personnel to ensure that subcontractor work meets the standards of the Program. The safety and health standards required to be utilized by subcontractors are incorporated directly into the contractual requirements set forth in requests for proposals and purchase orders.

Procurement Reviews

Each Program facility has a formal system to evaluate equipment and chemicals proposed for purchase to minimize or eliminate safety and health hazards. This system includes approval by safety and health organizations of requests for materials or new equipment. Material Safety Data Sheets (MSDSs) for all products or materials proposed for use are reviewed by the facility's safety and health organization prior to their initial use. This allows facility safety and health personnel to identify potential hazards and specify proper protective measures to reduce these hazards.

Hazard Analysis

Hazard analyses, such as job safety analyses or task analyses, are processes used in the Program to review work practices and identify concerns associated with overall work procedures.

Various job categories or facets of complex jobs are evaluated to identify potential hazards. Once potential hazards are identified, actions are taken to minimize the hazard and communicate appropriate precautions. Cognizant supervisors are responsible for ensuring that hazards are addressed and that corresponding task, equipment, or material changes have been implemented. Safety and health professionals may assist supervisors in preparation of an analysis, and in all cases review the hazard analysis for accuracy and completeness.

These analyses are utilized in individual employee training, preparing for planned safety observations, reviewing job procedures after accidents occur, and studying the job for improvements in safety and health methods. Whenever a significant safety or health issue arises, further analyses are conducted and procedures may be altered to incorporate the lessons learned.

Pertinent information is forwarded to the occupational medical department for their use in evaluating the workplace environment and/or hazards applicable to each employee.

Industrial Hygiene and Medical Workplace Hazard Evaluations

The basic elements of industrial hygiene and occupational medical workplace hazard evaluations at Program facilities include:

- Utilization of appropriate exposure limits established by the Navy Occupational Safety and Health (NAVOSH) program, Occupational Safety and Health Administration (OSHA), and American Conference of Governmental Industrial Hygienists (ACGIH) (references 5, 6, 8, and 9). In this regard, the Program continues to use OSHA limits established in 1989 despite a 1992 court decision which vacated these more protective exposure limits.

- Regular assessments of worksites by industrial hygiene and medical staff for the purpose of evaluating potential health hazards.
- Documented review of materials, processes, work practices and procedures used on specific jobs to determine hazard exposure potentials. These reviews determine specific job tasks that warrant routine or non-routine exposure monitoring, the use of personal protective equipment, or development of standardized work procedures to characterize and mitigate exposure to potential hazards.
- Establishment of workplace exposure monitoring programs which characterize potential hazard exposures during normal job activities throughout the facilities. Exposures are determined using standard exposure monitoring protocols as defined by the National Institute of Occupational Safety and Health (reference 10) and other recognized formats.
- Submittal of validated exposure data to the occupational medical staff for evaluation and incorporation into DOE facility personnel medical records. For Navy personnel, relevant exposure data is sent to the Naval branch medical clinic for inclusion in personnel medical records.
- Feedback to supervisory and management personnel on the results of employee exposure evaluations and monitoring so that procedure or process adjustments can be made if required.
- Medical examinations of personnel, based on potential exposures determined by the processes noted above.

Trend Analysis

Injury/illness documentation, medical records, and other records are reviewed frequently to ensure problem areas are identified and corrective actions are appropriate. At Program DOE facilities, injury and illness data for civilian personnel and subcontractors are compiled on a quarterly basis and submitted to the DOE. Accident reports for Naval personnel at DOE facilities and at the Moored Training Ship Facility are submitted to the Navy in accordance with NAVOSH requirements (references 5 and 6).

Analyzing trends is one of the most effective ways to identify problem areas and institute appropriate corrective measures to reduce accidents. Evaluations of each reportable occurrence are factored into continuous trend analysis by process/operation, type of injury/illness, or any other categorization needed to focus improvement actions at the true root causes. In addition, workers compensation records and medical clinic records provide supplemental accident history which may be used in reviewing injuries and illnesses. Following review, corrective actions (such as procedure revision, evaluation of work methods, additional training, and/or Hazard Analysis updating) are taken. Program facilities analyze even minor injury/illness events so that improvements may be implemented to prevent more serious injuries from occurring.

Critiques and Event Reporting

The Program evaluates and/or critiques significant events that actually or could potentially have caused injury to personnel. Critiques are formal evaluations of an event conducted by qualified individuals at each facility with Naval Reactors field office personnel in attendance. Facts pertinent to the event are documented, corrective actions established, and minutes are issued. For more serious events, and for events that have program wide significance, formal reports are issued and reviewed by Naval Reactors headquarters.

The Contractor Health and Safety Council conducts frequent teleconferences so that facilities may discuss health and safety events and the lessons learned from those events.

HAZARD CONTROL

OSHOM Manuals

All Naval Reactors Program facilities have written procedures which define programs to control potential safety and health hazards. These procedures are compiled into each individual facility's safety, industrial hygiene and occupational medicine manuals. Operations personnel prepare detailed written operating procedures and maintenance/repair manuals that incorporate safety and health procedures from these OSHOM manuals.

New Employee Indoctrination Training

Program facilities provide all new employees with occupational safety and health indoctrination training. This training includes facility safety instructions, procedures for reporting injuries and concerns, employee responsibilities, personal protective equipment, introduction to the organization of the facility's OSHOM program, and an overview of various facility emergency procedures.

Hazard Communication and Awareness Training

Hazard communication programs train workers to recognize work place hazards through chemical labeling, manufacturer's material safety data sheets, and discussions of hazards associated with certain job tasks or work areas. Hazard communication programs also train workers in the appropriate protective measures needed to minimize exposure to identified hazards.

In addition to hazard recognition training, awareness training is conducted to sensitize workers to look for and correct unsafe acts which could result in an injury. Awareness training emphasizes and reinforces that safe behavior will significantly reduce the chance of personal injury.

Continuous Training Programs

Training on OSHOM programs, as well as on many other aspects of each employee's job assignment, is regularly conducted at Program facilities. Continuing training provides knowledge on new requirements and ensures necessary skills and qualifications are maintained.

Navy Student and Instructor Training

Navy students and their instructors make up a large portion of the Program population at prototype sites and the majority of the population at the Moored Training Ship Facility in Charleston. The rigorous training and qualification program for all Naval nuclear propulsion plant operators includes key shipboard occupational safety and health requirements such as electrical safety, chemical use, gas-free engineering, emergency response actions, use of protective equipment, lock-out/tag-out, and other related safety requirements.

Informational Bulletins

Informational Bulletins, including DOE and Navy newsletters, training course schedules, defective materials notifications, and other sources of OSHOM news are distributed among Contractor Health and Safety Council members and the Naval Reactors field offices. This information enables each facility to remain up to date with the latest OSHOM developments and to pass this information on to facility personnel as needed. Each facility subscribes to a number of OSHOM publications.

Safety Representatives/Observers

Each Program facility has a safety representative or observer program. Safety representatives come from major departments and perform work area surveillance and submit written reports to work area management for improvement actions. These representatives also act as a conduit for other employees to express concerns. Suggestions of employees are actively solicited, evaluated, and, if appropriate, implemented. Representatives meet regularly to receive training, discuss concerns, and provide the OSHOM staff and operations management with recommendations for improvements to facility OSHOM programs.

Concern Reporting

All Naval Reactors facilities have a civilian employee concern management program in place (reference 3). Employee concern programs enable employees to raise safety and health concerns to the attention of management or occupational safety and health departments for corrective actions. Under these programs, employees may choose to anonymously report concerns. If the employee chooses not to report anonymously, the employee is informed of the status of corrective actions associated with the concern.

If an employee is not satisfied with the problem resolution, the concern will proceed to the next higher level of management. In the event that the employee is not satisfied with the resolution from the facility management chain, a procedure is in place to file concerns directly with Naval Reactors field office representatives. Employees may also bypass the management chain and file concerns directly with DOE.

Navy personnel concerns are handled within the military chain of command (reference 6).

Tracking and Follow-up Systems

All Program facilities have a systematic process for ensuring the timely resolution of safety and health issues. Safety and health hazards are corrected immediately, if possible, or stabilized to minimize associated hazards and then formally documented for tracking until final resolution. Open issues are tracked by prioritizing them on the basis of the hazard severity and appropriate time limits are assigned to complete corrective actions so all hazards are corrected in a timely manner.

Subcontractor Performance at Program Facilities

Each Program facility has procedures established for subcontractor work, including bidding and specification requirements, and ongoing oversight of subcontractor work. Subcontractors performing work at Program facilities are required by contract to comply with the same safety and health standards normally invoked at those facilities.

All subcontractors performing work at Program facilities are held responsible for the safety and health of their employees and subcontractors, and for taking corrective action on safety and health deficiencies resulting from subcontractor operations.

Subcontractor Worksite Overview

Subcontractors performing work at Program facilities are responsible for indoctrinating their personnel on all safety and health requirements, and any job specific requirements. The facility safety and health organization may assist in these indoctrinations. Each subcontractor is required to assign one of their employees as safety coordinator. For major subcontractors, full-time health, safety, and/or medical professionals may be required, and regular formal meetings between the subcontractor and various site organizations are held.

For each subcontract, there is a qualified facility employee who is responsible for day-to-day oversight and coordination of subcontractor operations. In addition to tracking the progress of the work, this individual is responsible for checking the adequacy of the subcontractor's safety and health programs. Each facility's safety and health organization also monitors the subcontractor's compliance by conducting inspections and assessments of work areas. Improvement actions are formally communicated to the subcontractor and tracked in the same manner as other corrective actions at the facility.

HEALTH EVALUATION, DIAGNOSIS, AND TREATMENT

The occupational medical programs at Program facilities are integrated into site operations to ensure adequate assessment of factors which affect personnel health and well being. Each facility's occupational medical program elements are documented in the respective site's occupational medical plan and include routine employee health examinations, as well as diagnosis and treatment of occupationally related injury and illness.

Employee Health Examinations

Routine health examinations are given to facility employees to provide initial and continuing health assessments in order to:

- Determine whether the employee's physical and mental health are compatible with the safe and reliable performance of assigned job tasks, including compliance with the Americans with Disabilities Act of 1990 (reference 11);
- Detect evidence of illness/injury and determine if there appears to be an occupational relationship; and
- Contribute to employee health maintenance by providing the opportunity for early detection, treatment, and prevention of occupationally related illnesses or injuries.

Comprehensive health examinations are conducted by a licensed physician or by an Occupational Health Examiner under the direction of a licensed physician, in accordance with current, sound, and accepted medical practices.

Routine health examinations/evaluations occur throughout an employee's career under the following circumstances:

- Preplacement Evaluations - Medical evaluations of job applicants are conducted prior to initial performance of job duties and, in the case of current employees, prior to a job transfer. The health status and fitness for duty of individuals is determined to ensure that assigned duties can be performed in a safe and reliable manner. Evaluations include review of applicable hazard analysis pertaining to the applicant/employee.
- Medical Surveillance Examinations and Health Monitoring - Special health examinations and health monitoring are conducted for employees who work in jobs involving specific physical, chemical, or biological hazards.
- Qualification Examinations - Examinations are conducted to qualify employees for job assignments for which specific medical qualification standards exist (e.g.,

special vehicle drivers, protective force personnel, and respirator wearers).

- Voluntary Periodic Examinations - Voluntary periodic examinations are offered to employees. A fundamental purpose of these examinations is to provide employees with a periodic assessment of their health. The frequency and type of examination offered is determined based on the individual's age and work exposures.

- Return to Work From Occupational Injury or Illness - All employees with occupationally-related injuries or illnesses are evaluated before returning to work. The scope of this evaluation is determined by the Occupational Health Examiner, based upon the nature and extent of the injury or illness, and is designed to ensure that the employee may return to work without undue health risk to self or others.

- Return to Work From Non-occupational Injury or Illness - Employees with significant non-occupationally-related injuries or illnesses are evaluated before returning to work. The scope of the evaluation is dependent upon the nature of the injury or illness, and is undertaken to ensure the employee can work without undue risk to self or others.

- Termination Health Evaluations - A health status review is available for all terminating employees. An examination is conducted, whenever possible, on employees with known occupational illnesses or injuries, documented or presumed exposures requiring evaluation by OSHA regulations (reference 8), or when more than one year has elapsed since the last examination.

Diagnosis and Treatment of Injury or Illness

All occupational injuries or illnesses, no matter how slight, are evaluated by medical personnel. Diagnosis and treatment of occupational injury or illness is prompt, with emphasis placed on rehabilitation and return to work at the earliest time compatible with employee health and job safety.

A close liaison exists between the medical and safety/health communities to ensure that the causes of occupational injuries or illnesses are fully evaluated and promptly acted upon.

Medical Services for Navy Personnel

Medical evaluation and care for Navy personnel is the responsibility of the local Naval hospital branch medical clinic. Immediate and emergency medical treatment for injuries or illnesses at DOE sites is provided by the facility medical staffs with immediate follow-up consultation with Navy medical personnel. If further diagnosis or treatment is warranted, the patient will be transported to nearby military or civilian medical facilities. Follow-up medical treatment or evaluation is provided by appropriate Naval medical services.

Communication between DOE prototype facility personnel and Naval medical staffs is coordinated through the Commanding Officer of the Nuclear Power Training Unit located at that facility. Navy medical staff visit the Program DOE facilities periodically and communicate directly with facility medical staff as appropriate to assist in proper diagnosis and treatment of Naval personnel.

At the Moored Training Ship Facility, personnel are served by a Navy sick-call clinic on-site and a larger clinic located elsewhere on the Charleston Naval Weapons Station site.

ACCOUNTABILITY

Independent Overview and Investigation

Naval Reactors field offices conduct frequent inspections and audits of OSHOM Programs to ascertain compliance with applicable requirements, to determine strengths and weaknesses, and to identify areas where improvement of the OSHOM programs is needed. These audits are complemented and augmented by a biennial program review by Naval Reactors headquarters personnel and representatives from other Naval Reactors field offices.

Additional oversight for Navy facilities is specified by OPNAV Instruction 5100.23 (reference 5). OPNAV Instruction 5100.23 assigns to the Navy Inspector General (NAVINSGEN) responsibility for conducting these oversight inspections which, for the Moored Training Ship Facility, would be conducted in consultation with Naval Reactors headquarters. While NAVINSGEN oversight inspections are normally conducted at locations determined to have the most severe safety and health problems, spot checks of other facilities are also conducted. Since its inception, no NAVINSGEN inspections have occurred at the Moored Training Ship Facility.

If significant safety or health events concerning civilian or Navy personnel at Program facilities occur, a formal independent investigation board is convened and includes senior personnel knowledgeable in the topical area and Naval Reactors Field Office or headquarters personnel (references 5,6 and 12). These investigations are categorized and typically involve several person-weeks of fact finding and evaluation effort.

General Accounting Office Evaluation

In the late 1980's allegations were made concerning environmental, health, and safety practices at some Program facilities. Allegations involved employee overexposure to radiation, unsafe reactor design, problems with asbestos work practices, and improper radioactive and hazardous waste disposal. In response to these allegations, the Chairman of the House Environment, Energy, and Natural Resources Subcommittee, House Committee on Government Operations in 1989 requested a comprehensive General Accounting Office review of the Program's environmental, safety, and health practices. The review of Program facilities focused on:

- Worker health and safety
- Radiological controls
- Reporting
- Environmental compliance

- Reactor Safety
- Adequacy of oversight
- Classification of information to prevent disclosure of problems

The GAO had unrestricted access to documents, facilities, and personnel within the Program, and talked in confidence with anyone who wished to discuss concerns during their fourteen month investigation. In 1991, following the review, the GAO testified in a joint hearing before the Department of Defense Nuclear Facilities Panel and the Seapower Subcommittee of the House Armed Services Committee.

In their testimony and report (references 13 and 14), the GAO stated the following:

"In the past we have testified many times before this Committee regarding problems in the Department of Energy. It is a pleasure to be here today to discuss a positive program in DOE."

"[W]e have reviewed the environmental, health, and safety practices at Naval Reactors laboratories and sites and have found no significant deficiencies."

"[W]e were given full and complete access to all classified and other information needed during our work. We reviewed thousands of classified documents and could find no trend or indication that information was classified to prevent public embarrassment."

"GAO's review of specific environmental and safety programs at Naval Reactors facilities show no basis for allegations that unsafe conditions exist there or that the environment is being adversely affected by activities conducted there."

Given the breadth and depth of the GAO review, their conclusion represents a strong independent endorsement of the excellence and effectiveness of OSHOM programs at Program facilities.

Internal Overview and Self Appraisals

OSHOM organizations at each Program facility perform frequent and detailed inspections to determine the effectiveness with which OSHOM programs are implemented by operating personnel at the facility. Similarly, the OSHOM organizations perform self appraisals of their own activities and programs to identify areas where improvements are appropriate. The minimum acceptable standard of performance is full compliance with applicable rules, regulations, and standards as defined in the HSSRD.

MEASURES OF PERFORMANCE

The Naval Reactors Program facilities track numerous performance indicators to measure OSHOM effectiveness. The indicators used are consistent with those employed by general industry and the DOE. These indicators are developed using criteria established by the Bureau of Labor Statistics (BLS) in their Recordkeeping Guidelines (reference 15). The data provided for general industry, based on BLS criteria, is obtained from the National Safety Council (reference 16). The DOE data provided in this report is taken from the "Occupational Injury and Property Damage Summary" reports published quarterly by the DOE. DOE has used the BLS guidelines for reporting injuries and illnesses since January 1990.

Fatalities

The Program has experienced no occupationally related fatalities of civilian or military personnel at its facilities for the five year period covered by this report and only three fatalities (all of which were subcontractor personnel) since the passage of the OSH Act in 1970. Two of the fatalities were due to falls and the third fatality was an individual who committed suicide while on-site. A comparison of occupationally related fatality incidence rates for the Naval Reactors Program (including civilian, subcontractor, and Navy personnel at Program facilities), DOE (including its subcontractors), and general industry (BLS) is shown in Table I.

TABLE I

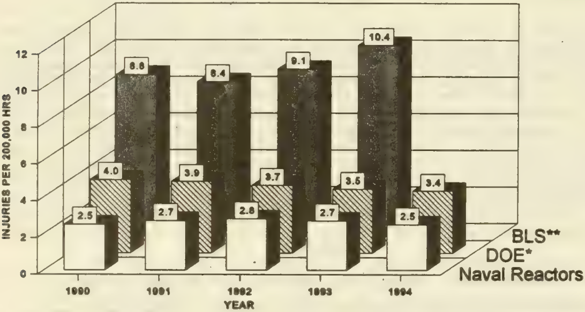
OCCUPATIONAL FATALITIES PER 100,000 PERSON-YEARS

Year	Naval Reactors	DOE	BLS
1990	0	2.3	9
1991	0	3.8	9
1992	0	5.2	7
1993	0	1.6	8
1994	0	0*	**

* Through second quarter only ** Data not available

Recordable Injury and Illness Incidence Rate

The total recordable injury and illness incidence rates for the civilian work force in the Naval Reactors Program[1], DOE, and general industry (BLS) are shown in Figure 1. As shown by Figure 1, the Program's injury and illness rates have remained lower than the comparable DOE rates and substantially lower than the BLS total industry rates.



RECORDABLE INJURY

AND ILLNESS INCIDENCE RATES

* Through Second Quarter 1994

**1994 BLS data unavailable

Figure 1

Lost Workday Case Incidence Rate and Lost Workday Incidence Rate

The BLS recording criteria requires that all cases involving injuries or illnesses in the course of work that require treatment beyond first aid be recorded. The BLS injury and illness recording system, however, gives no indication of the severity of an injury or illness; it merely shows that an injury or illness has occurred. For example, a cut requiring sutures, a broken arm, or fatality are not distinguishable in the reporting system; each of these would be counted as one injury in the reported data.

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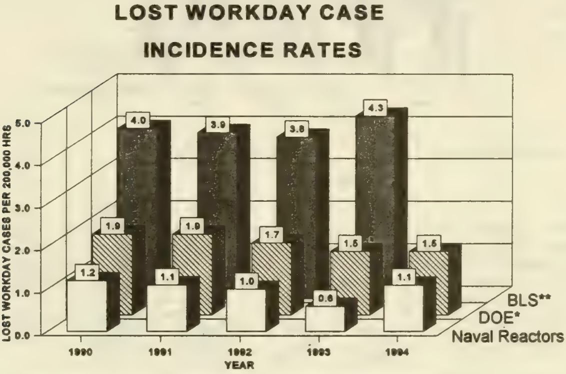
[1] Naval Reactors Program civilian work force data in Figures 1-4 includes data for civilian prime contractor and subcontractor personnel.

The severity of recordable cases is indicated by the number of cases which result in individuals losing time from work and by the number of days subsequently lost. Injuries and illnesses reported in the Program are generally minor in nature, such as cuts and abrasions, and require little or no time lost from work. Figure 2 shows the Naval Reactors Program, DOE, and general industry (BLS) rates of occupational injury or illness cases



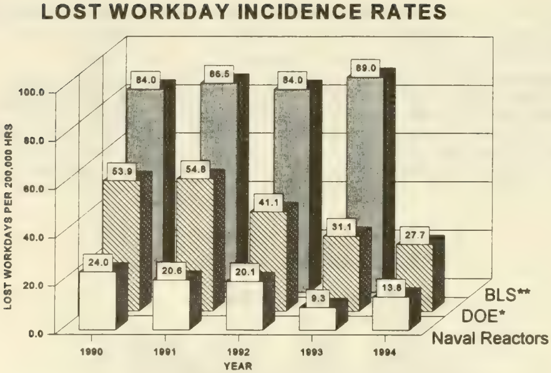
* Through Second Quarter 1994

**1994 BLS data unavailable

Figure 2

which resulted in individuals losing one or more workdays. Figure 2 shows that the Program lost workday case incidence rates are lower than the DOE rates and substantially lower than the BLS general industry rates.

Figure 3 shows the lost workday incidence rate, an indicator of the average number of workdays lost due to injuries and illnesses, and shows that the rate of lost workdays at Naval Reactors Program facilities is significantly below that of general industry (BLS) and the DOE.



* Through Second Quarter 1994 **1994 BLS data unavailable

Figure 3

Because significant differences exist between Navy injury and illness reporting criteria and the BLS criteria (i.e., the Navy has a higher threshold than that used by the BLS), combining civilian and military injury and illness data is not meaningful nor is a direct comparison of Navy performance indicators (reference 17) to DOE or BLS indicators. Therefore, the data for the Naval Reactors Program shown in Figures 1-3 do not include Navy personnel.

The Program tracks active duty Navy personnel injury and illness recordable case rates and lost workday case incident rates using the BLS criteria. For 1994, the injury and illness recordable incidence rate for Navy personnel at Program facilities, using the BLS criteria, was 2.1 per 200,000 hours worked. The lost workday case incidence rate was 0.8 cases that required one or more lost workdays per 200,000 hours worked. If Navy personnel data were included in Figures 1-2 the Program's incidence rates would decrease. For example, the Program injury and illness incidence rate (Figure 1) for 1994 would drop from 2.5 to 2.3, and the lost workday case incidence rate (Figure 2) for 1994 would drop from 1.1 to 1.0.

If the higher Navy threshold for reporting injuries and illnesses is applied to Naval Reactors Program data (civilian and military personnel), the Program's performance is better than the overall Navy's.

History of Cases Involving Days Away From Work

A further indication of Program injury and illness severity comes from a review of the history of cases resulting in days away from work (excluding cases with only restricted workdays). Figure 4 shows the Program's history of cases involving days away from work that were reported from 1990 to 1994 and the corresponding number of days lost. As shown in Figure 4, over 85% of the recordable injuries and illnesses resulted in either no days away from work or resulted in a relatively short period of time lost (less than 6 days).

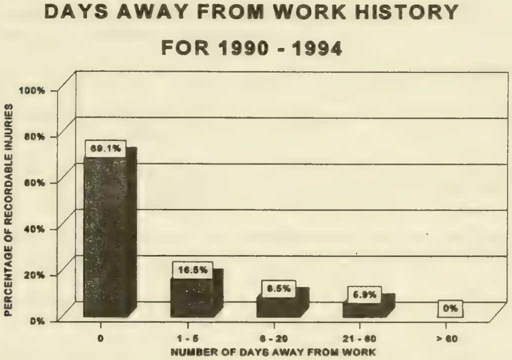


Figure 4

Accident Investigations

Occupational illnesses or accidents involving injury of civilian or military personnel at Program DOE facilities are formally investigated by the Program. These events are categorized and investigated depending on the nature and severity of the occurrence. The DOE categorizes the most serious events, which require major action, as Type A, (i.e. a fatality) and Type B (i.e. serious injury requiring hospitalization). A third category, Type C, is for less serious events subject to routine investigation by contractor personnel (reference 12). A similar classification system exists in the Navy's NAVOSH program (references 5 and 6).

The Program has had no Type A and only one Type B[2] event during the five years covered by this report. This compares to 58 Type A and Type B investigations for DOE operations during the same period. To put this in perspective, the Naval Reactors Program accounts for approximately five percent of total DOE effort (in hours of work performed) but only experienced two percent of the DOE total Type A and B events.

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[2] The Type B event was due to subcontractor personnel violating established OSH requirements and resulted in the overexposure of two subcontractor employees to carbon-monoxide during a renovation operation in a small room without adequate ventilation. Neither individual sustained permanent injury.

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WEDNESDAY, MARCH 15, 1995.

MATERIALS DISPOSITION

OFFICE OF WORKER AND COMMUNITY TRANSITION

WITNESSES

GREGORY P. RUDY, ACTING DIRECTOR, OFFICE OF FISSILE MATERIALS DISPOSITION

ROBERT W. DEGRASSE, JR., DIRECTOR, OFFICE OF WORKER AND COMMUNITY TRANSITION

Mr. MYERS. The committee will come to order. This afternoon is an executive session because we will be considering some materials that possibly are of a classified nature. The committee has determined that staff has proper clearance. Can you determine that everyone you have brought also has proper clearance for security?

Mr. DEGRASSE. Yes.

Mr. RUDY. Yes.

Mr. MYERS. We apologize. There will be some movement here, we have a vote on the Floor, so I will proceed the first 10 minutes. Hopefully then someone will come over to break it up, in the interest of saving you time, and saving us time because we have an appropriation bill on the Floor this afternoon. We hope to finish. Your prepared statements will be placed in the record. You may proceed as you care.

Mr. RUDY. I might add another Hoosier, more in the region. A graduate of Purdue.

BACKGROUND

Mr. RUDY. Thank you, Mr. Chairman. Mr. Chairman, the end of the Cold War has brought the arms and nuclear materials production race to a close, and as a result, significant quantities of plutonium and highly enriched uranium have become surplus to defense needs in both the United States and Russia.

Continued implementation of arms reduction agreements will result in further weapons dismantlements and increases in surplus stockpiles of weapons-usable fissile materials. With the collapse of the Soviet Union and the economic and social challenges faced by the newly forming democracies and its former states there is a serious risk of nuclear proliferation from the growing stockpiles of surplus weapons materials.

These materials could fall into the hands of terrorists or non-nuclear nations through theft or diversion in the former Soviet states. The National Academy of Sciences, in its report last year on the management and disposition of excess weapons plutonium, characterized this threat as a "clear and present danger". This nuclear danger is in many ways harder to manage and more dan-

gerous than the nuclear tensions of the Cold War era where the threat was well-characterized.

THE DEPARTMENT'S PROGRAM FOR FISSILE MATERIALS DISPOSITION

Within the Department of Energy, the Fissile Materials Disposition Program directs the technical and management efforts to provide for the safe, secure, and environmentally sound, long-term storage of all weapons-usable fissile materials and the disposition of those fissile materials which are declared surplus to our national defense needs.

The program also provides the lead technical support to the President's interagency working group on plutonium disposition. A major effort of this group involves joint technical studies with the Russians on options for plutonium disposition. The first joint meeting with the Russians was held in Moscow last May, and the second meeting was held at the end of this January at Los Alamos National Laboratory.

Cooperation with Russian in analysis of plutonium disposition technologies and issues is essential for real progress in reducing the global surplus of weapons-usable plutonium. The budget request for fissile materials disposition in fiscal year 1996 is $70 million. These funds will be used to complete technical, schedule, and cost analyses, as well as environmental analyses that are necessary to support decisions on the long-term storage and disposition of weapons-usable materials.

The $70 million budget request is an increase of $20 million from the program's initial budget appropriation in fiscal year 1995. This increase reflects the start-up of the program and supports efforts to complete the various analyses necessary for a record of decision in late 1996. The increased funding will also enable us to begin the preparation of the specific designs, which will be necessary to implement storage and disposition decisions.

DEFINING THE PATH FORWARD FOR LONG-TERM STORAGE AND DISPOSITION

I would like now to briefly discuss the results of our efforts over the last year followed by an overview of the key efforts that we plan for fiscal year 1996. As a member of the Nuclear Weapons Council, the Department of Energy helped provide analyses and support for deliberations on the initial quantities of highly enriched uranium and plutonium in the U.S. stockpile that could be declared surplus to defense needs.

On March 1st, to further demonstrate commitment to the goals of the Nuclear Nonproliferation Treaty the President ordered that 200 tons of fissile materials be permanently withdrawn from the U.S. nuclear stockpile. This is in addition to the 10 tons of highly enriched uranium, which was made available last year for international safeguards at the Oak Ridge Y–12 facility.

[Deleted].

ANALYSES UNDER THE NATIONAL ENVIRONMENTAL POLICY ACT

In June of last year, the Department issued a notice of intent under the National Environmental Policy Act to prepare a Programmatic Environmental Impact Statement on the long-term storage and disposition of weapons-usable materials. Subsequently, public meetings were held to assist in determining the appropriate scope of the environmental impact statement. These scoping efforts provided for substantial dialogue and direct public and industry involvement in establishing the scope for the environmental analysis.

In total, 12 meetings were held across the country between August and October, and they were attended by over 1,200 people. These sessions generated thousands of comments and suggestions, and in addition, numerous written comments were received. Subsequent to the formal public meetings, separate meetings were held with the public and industry to discuss technical options for plutonium disposition and for highly enriched uranium disposition. These meetings were likewise well-attended.

Based on these efforts, the Department has identified and will not proceed with two separate environmental analyses addressing weapons-usable fissile materials. These analyses are, first, an Environmental Impact Statement, an EIS, addressing disposition of surplus highly enriched uranium; and secondly, a Programmatic Environmental Impact Statement, which will address the long-term storage of all weapons-usable plutonium and highly enriched uranium and the disposition of surplus plutonium.

Proceeding with separate environmental analyses is appropriate because unlike plutonium, surplus highly enriched uranium can be promptly rendered nonweapons-usable by blending it down with other uranium materials. Decisions on surplus highly enriched uranium disposition do not impact or preclude other decisions which may be made regarding disposition of surplus plutonium.

The blending of highly enriched uranium does not require further study or technology development. Consistent with the President's nonproliferation policy, blending highly enriched uranium down to low enriched uranium is the most rapid path for making the material nonweapons-usable and would demonstrate the United States' nonproliferation commitment to the other nations. Once blended down, some of the surplus uranium could be used in commercial fuel. This is the course of action initiated by the United States and not under way in Russia to eliminate some 500 metric tons of highly enriched uranium from their stockpiles.

TRANSFER OF SURPLUS HIGHLY ENRICHED URANIUM TO THE U.S. ENRICHMENT CORPORATION

In this regard, the EIS will also address the proposed transfer to the United States enrichment corporation of approximately 50 metric tons of surplus highly enriched uranium and other uranium materials for blending and subsequent use as low enriched fuel in commercial reactors. When the United States Enrichment Corporation is privatized, receipts from the sale will accrue to the U.S. Treasury. This would include an estimated $400 million from the value of the transferred surplus uranium materials. The schedule for the surplus highly enriched uranium disposition Environmental Impact Statement includes issuing a draft of the document late this summer and a final document and record of decision by early in calendar year 1996.

PEIS SCHEDULE

The second analysis, the Programmatic Environmental Impact Statement and other analyses addressing options for long-term storage and disposition of surplus plutonium are more complex and will require more time to complete than decisions on the disposition of surplus highly enriched uranium where these technologies and a path forward already exist.

Within the next several weeks, we intend to issue an Implementation Plan for the scope of the options to be addressed in the Programmatic Environmental Impact Statement. This will be followed by completion of a draft for public comment near the end of this year. After public meetings and comments on the draft, a final document will be prepared and issued in late 1996. This Programmatic Environmental Impact Statement, together with technical, cost, schedule, and nonproliferation policy assessments will provide the information to subsequently support a Record of Decision late in 1996. This Record of Decision will address both long-term storage options and plutonium disposition options.

LONG-TERM STORAGE

The long-term storage decisions will include whether to upgrade existing facilities or to build new consolidated storage facilities for the weapons-usable materials. They will also include the location of any new consolidated storage facilities. The Department's implementation of long-term storage decisions would promptly follow the Record of Decision at the end of 1996.

SURPLUS PLUTONIUM DISPOSITION

The plutonium disposition decisions will identify the technologies which the department would deploy to render the surplus plutonium as a inaccessible for weapons use as the much larger and growing quantity of plutonium that exists in spent nuclear fuel form commercial power reactors. This was referred to as the "spent fuel standard" by the National Academy of Sciences in its report on the disposition of surplus weapons plutonium.

At this point in our efforts we have reviewed and screened out a number of initial technology proposals for plutonium disposal. From the 37 disposition options initially identified, 11 have been selected for further evaluation in the Programmatic Environmental Impact Statement. All 11 of these disposition alternatives would attain the "spent fuel standard" and all have paths forward for ultimate disposal either in a high level waste repository or in a deep bore hole.

This is important because time is of the essence in beginning to reduce the global stockpiles of weapons-usable fissile materials. The options screened out involve much larger technical uncertainty and risk with related increased cost and time. The up front screening efforts we have completed will save us time and money by focusing on the most viable disposal options. The Department's technical efforts and analyses and its Record of Decision will provide the President with a credible basis and the flexibility to initiate disposal of surplus plutonium, either multilaterally or bilaterally through negotiations or unilaterally as an example to other nations.

This will be a significant action that will directly reduce the global nuclear danger. The success of the Department's efforts will contribute to advancing U.S. and international nonproliferation interests and will help improve the cost-effectiveness of the management of our stockpiles of weapons-usable materials. We have a clear understanding of the sense of urgency for this mission, and we have the ability and the resolve to efficiently accomplish it.

Thank you for your past and continuing support of these important efforts. I will be pleased to respond to any questions you may have.

[The prepared statement of Mr. Rudy appears at the end of the hearing record.]

WORK FORCE TRANSITION ISSUES

Mr. KNOLLENBERG [presiding]. Thank you very much, Mr. Rudy. Now, I presume that Mr. DeGrasse, are you going to present testimony or is that in writing?

Mr. DEGRASSE. I also have a prepared statement, and I intend to provide some oral remarks here this afternoon.

Mr. KNOLLENBERG. I think it would be appropriate right now for you to make your remarks and upon the return of the Chairman and/or another Member or so, we can offer any questions at that point so why don't you proceed.

Mr. DEGRASSE. Mr. Chairman, that would be fine. Thank you very much for the opportunity to discuss issues associated with the Office of Worker and Community Transition and to seek your support for our fiscal year 1996 budget request of $100 million.

Three months ago I would not have expected to be testifying before you today on work force transition issues. Back in December I was actually interviewing candidates in the Department to take over my interim responsibilities for the Department's new Office of Worker and Community Transition.

In fact, I expected to be sitting where Mr. Rudy is this afternoon, working on fissile material disposition. The reason that this change took place was back in the middle of December I was asked by our Under Secretary to take over management of our impending contractor work force reductions because of my experience in this program over the last two years, and because of the fact that we are facing significant reductions in our work force.

Up until the President's decision to seek a middle class tax cut, we had not been planning to undertake the size of reductions that we brought to the Congress in this budget. As you are well aware, both the President and the Congress are looking for significant reductions in the Federal budget, looking for a Federal Government that is more efficient and costs less.

The Department has committed for its part to meet this challenge by proposing some $14 billion in cost reductions over the next five years. The Office of Worker and Community Transition will play an important role in meeting this commitment. We are planning to reduce our contractor work force by approximately 19,000 positions by the end of calendar year 1995. That is roughly 14 percent of our work force.

Most of these reductions will come from our environmental programs and are estimated to result in budget savings of approximately four to five billion dollars over the next five years. We are also continuing post Cold War transitions. We are closing the nuclear weapons facilities at the Mound plant in Ohio, in Pinellas, Florida, and part of our Rocky Flats facility in Colorado. This downsizing is possible, prudent and desirable for a number of reasons.

First, we simply can't afford the levels of employment that we currently have at our facilities. Second, we do not need the current levels of employment. Our contractor employment at many sites actually exceeds the levels of employment at the height of weapons production.

In fact, between 1988 and 1992 as environmental spending increased, layers of contractor employees were added on top of the existing defense production work force base. Finally, we need to reduce the work force to be more efficient and to essentially get the job done without stepping over each other's toes in the process of doing that.

We believe that we can achieve these reductions without affecting the scope of the cleanup program, as Mr. Grumbly testified earlier while ensuring that the remediation tasks with the greatest risk are not adversely impacted. Our 19,000 contractor job reduction involves a series of reductions at major sites in Richland, Washington. For example, roughly 4,800 positions, representing a quarter of the work force, are likely to be affected in this isolated community.

Savannah River in Akin, South Carolina, faces a cut of 4,200 employees over the next four months, nearly 20 percent of the total in a relatively isolated region as well. Rocky Flats, while it isn't in an isolated area, is looking at a decline of 2,400 positions over the next year, 36 percent of the total employment. In Nevada and Idaho we are also looking at reductions of up to a quarter of their employment in the next year's period of time.

QUALIFIED WORK FORCE

Our number one goal in undertaking these reductions is to form a work force qualified to achieve program objectives. Each site is undertaking a comprehensive review of its future skills requirements to make certain that this goal is met, and our office is focusing on this aspect of the downsizing. We are also committed to mitigating the effects of work force adjustment, and, in fact, because most of these sites have been through reductions already involving voluntary separation incentives, and because of the magnitude of these cuts, we expect that a fairly high percentage of our employment reductions will be through pink slips or involuntarily essentially layoffs.

For example, at the Savannah River site we expect that about 66 percent, two-thirds of the separations will be through layoffs, and that will be happening in the next few months. In response, the Department will focus on providing effective out placement assistance programs, including training and educational assistance that utilize the best practices we know of in both the private and the public sector to try to assist in mitigation. Up until now the Department has approved plans and actions that have resulted in roughly 11,000 contractor positions being eliminated over the last two fiscal years.

Of this amount of reductions, roughly only 20 percent resulted from involuntary layoffs. This underlines the point that I made before that we have really been focusing in the past on providing early retirements and voluntary separations as a way of reducing our work force. And the benefit of that, of course, is that by doing it in this way, not only does volunteerism allow you to avoid significant potential social impacts, but it allows the sites to pick and choose what employees are separated when you have a choice of which person is let go.

Early retirement programs don't provide that choice, but our basic objective here is to design a work force that meets the needs of our missions into the next decade. We have averaged over the course of the last two years roughly 27,000 dollars per position eliminated.

Now, this amount of money compares very favorably to private sector experience in downsizing. It is the same as, it is roughly the same as the amount of money we are offering to buy out Federal employees, and it also represents a number that is similar to the sorts of arrangements that have existed in some of the Defense Department downsizings that have occurred as well. So there is good experience to show that this indeed is a reasonable metric to try to shoot at in terms of the costs of these programs. We estimate that the cost savings associated with the salaries of the 11,000 people that have thus far been, the jobs that have been eliminated will be roughly $600 million per year in salary savings. From this perspective, the one-time costs, transition costs associated with reducing this employment level of $300 million appears to be a good investment for the taxpayers.

PLANNING FOR RESTRUCTURING

We established these results through a 120-day work force restructuring planning process that includes consultation with affected employees, elected officials, union representatives, and others. The results of this process has been work force restructuring plans that address the unique needs of our displaced employees by offering transition assistance in various forms. We have talked about a few of them already, but we also try to provide retraining where appropriate for the new missions, and we have assisted in tuition programs that will provide opportunities for people to find employment outside of our Department as well, up to $10,000 of tuition assistance over four years.

These plans also offer medical benefits extension for families until other coverage can be secured. We think in particular the Department of Energy, because of the workers being exposed potentially to radionuclides, we have a special responsibility to provide continuation of medical coverage in these cases, so we allow employees to pick up medical coverage at the COBRA rate.

Into the future, if they can't find it elsewhere we pay for it, half of it initially in the first year after they have been separated. The key components of these plans, however, are an assessment of the Department's future work force needs, an evaluation of existing skills and a clear-headed strategies for making the transition necessary to efficiently accomplish the Department's mission.

We depend upon our site offices, the people in the field to do this work and make sure that it is done effectively because, as you probably know, in the private sector, as the private sector has found, downsizing does not necessarily guarantee cost savings, and, in fact, some corporations have found that after downsizing they end up with a worse cost structure than they started with. That is the concern we face as well as the prospect that we will be cutting without effecting the cost structure of the work we are doing.

I work very closely with Mr. Grumbly and the Environmental Management program in particular because it is their program that is in large measure involved here to ensure that we prudently manage these reductions so that we retain needed employees, avoid disruption, and achieve cost savings. Another part of our mission is looking, is trying to address some of the impacts of work force reduction on the communities affected by our work force restructuring.

As I have mentioned, some of our facilities are somewhat isolated and potentially result in significant impacts on the communities involved because of their dependence on funding provided through Department of Energy activities. I wanted to take a moment just to focus on a couple of the examples of where we have tried to develop public-private partnerships and develop ways in which we could leverage public funding to provide for new employment and economic opportunities in some of the facilities that we are leaving.

AVOIDED COSTS

In particular, at the Pinellas plant in Pinellas County, Florida, we have just completed the sale of a facility to their county industrial council, and what we have been able to do is avoid costs to the government of roughly $9 to $34 million associated with disposing of the facility through the General Services Administration. Essentially, what we have been able to do is potentially provide an opportunity for the contractor, Martin Marietta, to develop a new product based on its work with the Department of Energy on neutron generators that could result in employment of up to 400 people and would result in a substantial avoidance of work force restructuring costs that are in the contract that are directly written into the contract associated with base closing or essentially with a plant closing at the Pinellas facility.

In addition, what this allows the Industrial Council at Pinellas to do is to actively market the facility for other tenants and potentially resulting in reducing the amount of the facility that we have landlord responsibility for over the next few years, so all in all what we have managed to do is figure out a way to potentially reduce our burden in government expenditures by between $9 and $34 million, and we have just, as I said, completed the contract for the transfer of the property and we, in fact, intend to close on that closure within the next couple of weeks so that is just the very beginning of that effort.

At Mound in Ohio, Miamisburg, Ohio, we have already begun to lease parts of this facility. In fact, we have 13 commercial leases that have resulted in 77 jobs, and this started back in October.

Within the year, we expect at least another 200 additional jobs to be able to be created through private industry coming in and utilizing some of the machinery and facilities that are at our Miamisburg facility.

At Rocky Flats in Colorado the Department has initiated a demonstration project to determine if existing work force can be reemployed to recycle waste materials into commercial products. The initial phase of this project will reemploy 40 of the existing work force and if we find that there is a market and if the commercial firm is able to achieve what they hope to achieve, they may be able to employ up to 700 former workers that were at the Rocky Flats plant.

In addition, what this does is it moves forward and reduces potentially the costs of maintaining our facility there at Rocky Flats because we cannot only take down the fences, clean up a building, but essentially turn it over to the private sector there. So we believe that continued investment in opportunities arising out of the end of the Cold War is good for the government and good potentially for the communities that are being affected. We hope, we know that there is likely to be lesser funding available for economic development given the massive reductions in employment that we are about to undertake. However, we continue to believe that there are potential opportunities that we at least ought to give some consideration to, and we will essentially be providing technical assistance and planning assistance to the communities over the next year, probably not to exceed about $10 million of our funding.

PROGRAM FUNDING

That brings me to the last part of the testimony, which is our issues associated with program funding for the next year. We are asking for specifically for $100 million, which is $15 million less than what we received in the last fiscal year. But because of the fact that work force restructuring is primarily going to be in the Environmental Management Program, that program has identified up to $200 million in their budget for the purposes of work force restructuring. This is about an $85 million increase over those funds that they had identified in 1995.

Overall, since this work force restructuring, we are talking about the 19,000 employee reduction is going to be performed over two fiscal years, 1995 and 1996. We, combining the funds available in both fiscal years, we believe about $500 million will be available for mitigating the 19,000 reduction in contractor employment or roughly about $25,000 per separated employee.

We believe this funding is essential if we are to realize the long-term savings approaching $5 billion over the next five years to which this work force restructuring is designed to achieve.

I guess I would like to conclude by saying the Department remains committed to investing in the futures of the workers in and communities who help maintain the Nation's deterrent force during the Cold War. When the costs of this program are weighed against the resources that these workers and communities represent, it is in the Department's view a wise investment.

The Office of Worker and Community Transition intends to play a role, a vital role in achieving these goals. We are helping to shape successful transitions that can assure future economic health for the families and communities affected by the end of the Cold War, and we are committed to effectively restructuring the Department's work force in a way that leads to real cost savings while maintaining the safety of the employees and the operations of the Department. Your support is very much appreciated, and we look forward to any questions that you may have regarding either one of these two programs.

Thank you.

[The prepared statement of Mr. DeGrasse appears at the end of the hearing record.]

ELIMINATE JOBS

Mr. KNOLLENBERG. Thank you very much, gentlemen. I am willing to yield the Chair back to the Chairman.

Mr. MYERS. No, go ahead.

Mr. KNOLLENBERG. If I could, I would like to direct a question or two to you, Mr. DeGrasse.

Mr. DEGRASSE. Yes, sir.

Mr. KNOLLENBERG. Then get away to a meeting I have got to get to which I am late for now. So you can figure that one out.

You talked about the work force restructuring, which is part of the downsizing, part of maybe Reinventing Government, a part of just the process that you are going through, which is kind of an evolutionary or that word might describe it. In the 11,000 jobs that you are eliminating——

Mr. DEGRASSE. Those have already been eliminated. There is between 1993 and today we have eliminated 11,000 positions. We are targeting another 19,000 over the next 12-month period basically.

Mr. KNOLLENBERG. So that is a combination of 30,000 right.

Mr. DEGRASSE. Thirty thousand when we are all done.

Mr. KNOLLENBERG. Is any of the money in this program, I noticed that you have downsized. I assume, was there any carryover from last year? I haven't checked.

Mr. DEGRASSE. The funding that we have had available is laid out in the back of our testimony in a budget table that describes funding that has been available in this area, and in 1993 we had $85 million of operating funds that were used for this purpose, and that is directly costed funding, and so there was no carryover from that.

In the 1994 period of time there was $200 million available, and all of that money is obligated. We are working on obligations now. I have essentially obligated the $115 million of the program in 1995 as well, so there is essentially no unobligated balances in the program.

There is some slack in the Environmental Restoration Program in the sense that if operating funds are needed to reduce further the employment, that money is essentially fungible. They could use it for these purposes by law, so that is where there is money available.

Mr. KNOLLENBERG. Are you using those funds to provide for the early retirements?

Mr. DEGRASSE. That is correct. In fact, for example, at the Savannah River site we are in the process of deciding finally on about a $90 million package of work force restructuring costs, and a substantial portion of that, about $60 million, will be paid for directly by the Environmental Management Program out of savings essentially of the last three months of the year.

If they achieve their result, which is to get the employees off the rolls by the beginning of July, the savings from the last three months of the fiscal year will pay for the costs of transitioning, so that is the way that we are managing this in a sense, essentially trying to avoid costs and pay for the transition through avoided costs.

EMPLOYEE BUYOUTS

Mr. KNOLLENBERG. The buyouts you are talking about, are they—you said these were comparable to the rest of government.

Mr. DEGRASSE. Our average is comparable to the rest of government.

Mr. KNOLLENBERG. Are they comparable to the private sector, would you say?

Mr. DEGRASSE. That is correct. The private sector ranges in a much broader pattern. We look at a—there are essentially two major tools for buyouts. One of them is to enhance a defined benefit package for an early retirement program, or essentially to have some form of severance or enhanced severance, a voluntary separation program. And these two different vehicles are useful in different ways.

Early retirement program essentially is an across-the-board mechanism. You cannot limit who has access to an early retirement program. And for those reasons we have tried to limit the generosity of those programs, though there have been relatively generous programs offered. We offer on average three years to service, adding three years to the service life of the employee and three years to the service of the employee and three years to age to essentially to calculate their unreduced pension benefits.

Now, that is a fairly standard formula, and there are some four plus fours and five plus fives in industry. But we have tried to stay within that, because they begin to get very expensive per employee after three plus threes. So we have tried to stay with that formula as much as possible.

On the voluntary separation side, often those involve more generous separations than a week for—a week's pay for a year of service, which is sort of the average in private industry for severance. Now, in private industry, of course, the separation incentives that are offered really range all across the map, but we have determined and tried to stay at the low end of the spectrum in those as well. But they are very beneficial. That is the Voluntary Separation Program, because we can pick and choose who is separated and who isn't, and particularly when we are talking about the types of activities in our facilities.

Mr. KNOLLENBERG. You can select those——

Mr. DEGRASSE. Within skills categories. In other words, it is hard—if you get into issues associated with discrimination, you can't choose down to the employee, but you can choose on the basis of skills and of where you need critical people to remain. So in the broad categories we have an opportunity to choose more and have greater flexibility in designing a work force through the voluntary——

Mr. KNOLLENBERG. Are you trying to retain a quality force?

Mr. DEGRASSE. That is exactly right, and that is why, that is why the only way to do that, really, is to make sure that we do not entirely gut our young work force or to allow simply through bumping the senior people to end up in jobs that aren't necessarily appropriate for us. So if the voluntary tools are taken away from us, the prospects of efficiency begin lessened is much greater. That is part of the reason why we are focusing on this.

Mr. KNOLLENBERG. Many of the costs of retirement are calculable. They are estimatable, but one cost that may or may not be calculable is the COBRA benefit that you extend. How long do you extend that for? And most of the time it is a Cadillac-type plan, so you have to go with the better and the more expensive.

Mr. DEGRASSE. The COBRA plan after the first—after the second year. We pay for half in the first year, a quarter in the second year, and then they pay the full COBRA costs themselves. So the cost is borne by the employees after that. What we do is guarantee them the right to medical insurance. We don't, we don't provide money for them after that.

Mr. KNOLLENBERG. I would think that would be the smart thing to do and obviously the folks coming out of this arena probably do have others that are suspect or a suspicion about them being uninsurable. Maybe something will be done about that in another committee, but that is enough for today. But I do appreciate your response.

Mr. Rudy, I am sorry I didn't have a chance to hear the first of your testimony. The real reason I am not inquiring further is I have got to get to another meeting and I am going to, in fact, extend to the Chairman the Chairman's right to do whatever he wants to. So Mr. Myers.

ENVIRONMENTAL MANAGEMENT

Mr. MYERS. Thank you. Thank you for covering. Again, we apologize for the necessity to switch back and forth. Following up some of the questions here, earlier we learned from the Environmental Management program that they are going to be releasing 18,000 people.

Is that part of your responsibility to relocate some of those people, or are they going to be completely out of the Department of Energy or are there going to be some transferred? What is the disposition, I guess I am asking.

Mr. DEGRASSE. Mr. Grumbly and I, back starting early in January, have been collaborating very closely in this effort, Mr. Myers, and our expectation is that we do not believe there is going to be a substantial amount of rehiring of this employment group.

Our sense is that generally there aren't a lot of places in the Department that are likely to grow in the future, and so we are expecting a substantial amount of separations here. There will be some juggling and adjustments, but we think on the whole, most of the employment is going to end up—that there aren't going to be other opportunities.

Over the last two years, we have had the flexibility of being able to transfer people from the—from defense work to environmental management, and Oak Ridge, for example, some 1,700 people ended up shifting employment in one way or another over the last two years.

We don't think there is going to be as much flexibility to do that. We are, though, trying to provide opportunities for people to retrain for skills in environmental management and also for jobs outside of the Department. We know that that is going to be a key part of what we expect to happen in the next couple of years.

Mr. MYERS. About every agency in the Federal Government has the same responsibility of reduction-in-force to meet that 252,000 that has to be met in three more years.

Mr. DEGRASSE. Yes.

Mr. MYERS. But has there been any transfer between agencies?

Mr. DEGRASSE. Well, that is an interesting question. I am not sure that we have—we are talking here, of course, about our contractor work force and so they don't have rights as civil servants.

Mr. MYERS. Eighteen thousand contractor people?

Mr. DEGRASSE. This is contractor people. This is the contractor side of the house. So they really don't have the rights to try to go in and go for——

BUYOUTS

Mr. MYERS. That doesn't help you with the 250 to meet your obligation under a buyout then, does it?

Mr. DEGRASSE. No, that is right. And I compare our programs to try to accomplish this to the metrics of the Federal Government Work Force Buyout Program. So what we have tried to do is not to provide things that are substantially, you know, unfair compared to what we are doing in the Federal Government side of the house here.

Mr. MYERS. As we all know, there was a $25,000 limit that any one person could receive on the buyout. I think I read where the Department of Energy was having some problems. Many of the people said that was just an insufficient amount for buyout of contracts. What can you tell us about that?

Mr. DEGRASSE. Public process associated with developing our work force restructuring plans has resulted certainly in a substantial amount of issues being raised about what is fair to people. An so certainly there has been—there have been demands for a variety of different packages associated with early retirements or voluntary separations.

Some of our voluntary—our early retirement packages have been very—have per worker been very substantial, and substantially over the $25,000 per employee. We intended to balance that out with voluntary—involuntary separations and lower cost separations in other areas. So the average is $25,000, but there have been a variety of programs that have been over $25,000 in terms of voluntary, early retirement programs.

Those early retirement programs, though, I have said we try to keep within the formula of three years of service and three years of age, and they tend to run—they can run anywhere from about $30,000 to above $60,000 on average, depending on what other things are done as well as the three plus three. So clearly, the early retirement programs are the most expensive part of this restructuring. We have done it—we did it over the last couple of years. We don't intend to do it very much in the future, primarily because that was a way of essentially offering a way for the people who had been actively involved in our defense production, but probably did not have the skills appropriate to environmental, environmental restoration. Now, we have gone through these early retirements at most of our facilities and don't see the need for them as much in the future.

Mr. MYERS. It sounds like the environmental restoration and environmental management are kind of a catchall, when nobody fits anyplace else, throw them over there. Is that the way you treat them?

Mr. DEGRASSE. I am afraid that is probably what happened over the last couple of years and we can't afford to do that any more and now what we are going to have to is weed out those—the 19,000 is—we are weeding out the 19,000 this year and next, because of the fact that that is what has happened.

We have come to you honestly in saying that we have layered—that Mr. Grumbly and I both know that we have layered over the last couple of years, there has been a tendency to layer on additional environmental management people over the defense production people that were there before, and we know that we have to substantially reduce the cost of doing business.

Mr. Grumbly did a base line as he probably told you showing that we are by far the most expensive environmental management activity in the—known to man, as he says.

CONTRACT BENEFITS

Mr. MYERS. Did I understand a moment ago you say you have paid more than $25,000 on a buyout?

Mr. DEGRASSE. Yes, we have.

Mr. MYERS. How have you done that?

Mr. DEGRASSE. How have we done that? Essentially what happens is that the early retirements are offered to our contractors, offered by our contractors to their employees, and it is simply through, it is simply through contractual mechanisms that we have available to—with our contractors. In the Department of Energy we have a relationship with our contractors that involves each one of them developing a benefits package with their employees that is consistent with the guidelines that the Department developed over the period of the Cold War to treat management and operating contractor employees.

So through out—what is referred to as Appendix A of the contracts that we have, the arrangements there, we essentially provide monies to the contractors as an allowable cost of doing business to enhance the buy contract benefits that are available to the employees, and you do this essentially the same way that a corporation would. It is an allowable cost of business, but it does result, as you say, in costs per employee higher than $25,000 per head.

Mr. MYERS. Well, a corporation can do that because they don't have—unless they have some regulation or rule provided by their directors, but you have a statutory provision. Have you got permission to do this or have you just disguised it some other way?

Mr. DEGRASSE. We have been pretty open about it. Certainly, the Office of Management and Budget has been fully informed and is very much aware of the types of programs we have undertaken, and the authority exists within the Atomic Energy Act for us to offer these sorts of programs. So we are not precluded from it, and we have been, we have been open entirely with what we have done.

We have offered these—before this administration came in, there were early retirement programs offered. For example, the Bush administration offered at the very end of this period that was originally, I believe, $56,000 per person.

Mr. MYERS. We didn't have the same statute then that we have now.

Mr. DEGRASSE. Yes, but that statute refers only to Federal employees, and not to contractor employees of the Department. So what we have tried to do is on average not exceed what is offered to Federal employees in our down sizings.

Mr. MYERS. And you feel that you have a legal responsibility to the contract employees?

Mr. DEGRASSE. Will, it is not a legal responsibility to the contract employees. We think that in terms of efficiency of operations, it is a good way to do business. I mean we wouldn't do this if it was not—we didn't believe that the business benefits of this paid for the costs of these early retirement programs.

We know they cost a lot of money and as a result, we have to go into them having done a cost-benefit analysis of what the outcome will be, how fast we are going to be able to pay them back, and in most cases, what you are doing in reducing the rolls there is that if you are paying $60,000 to get rid of an employee who is making $70,000, you are clearly just in direct labor costs managing to get back the money that you have laid out in a year's period of time.

So for those—so in the cases where we have older employees who aren't necessarily going to be useful to us in doing environmental management work, it makes good business sense for us to pay a little bit more to separate those employees.

HEALTH EFFECTS OF PLUTONIUM

Mr. MYERS. Well, my boilermaker friend, we haven't forgotten you.

This committee, through the years, has received testimony from many, many witnesses, but I always remember some witnesses have come in and testified about the effects of plutonium on people. We have had witnesses sit where you are sitting right now say they have ingested plutonium, they have handled plutonium without any ill-effects. What can you tell us about plutonium, about the dangers of handling plutonium?

Mr. RUDY. If not handled properly, it can be dangerous. If handled in accordance with well-established safety and environmental procedures, it can be effectively managed. The surplus plutonium, which we are working to disposition, the majority of it, is probably in the most safely-engineered form of plutonium which we have. It is in the form of a plutonium pit, which is engineered and designed to be safe from a criticality standpoint.

It is wrapped in an inert metal shell and it is stored in containers and systems which can assure worker health and safety. The Department recently completed its plutonium vulnerability assessment, which you may be familiar with and it indicated a series of issues and concerns regarding some of the inventories of materials we presently have. The Department is under way with a response to the Defense Board, what they termed recommendation 94–1, to bring these plutonium inventories up to a safe and secure interim storage condition. So the Department takes this issue very seriously and believes that we are moving forward with a process to make these materials as safe as possible.

Mr. MYERS. If a terrorist should obtain plutonium by some means and place it in a water tower, what would be the threat and danger to people drinking that water?

Mr. RUDY. Mr. Chairman, I wouldn't really be qualified to comment on the health effects. It would depend on the form in which the material was placed in the tank, the quantity of the material and the route of ingestion of the plutonium. The greatest risk associated with the plutonium is the alpha emission from it, which, if ingested, can cause long-term health effects, cancers.

Mr. MYERS. Well, we received testimony today—is there any record of anyone ever being—suffering from plutonium exposure? I think we had witnesses here that testified that there is no record of anybody ever being—oh, we have? She has a better memory than I have. Okay.

Well, we have had several witnesses this year testify, one say we could lose 5,000 people at DOE and never know we lost them. We had one witness, and we had other witnesses say that we overreacted to the danger of nuclear materials, that we have overreacted about the security of, through environmental management. So this committee, and I don't think we have any nuclear engineers on the committee, has to rely upon witnesses, and we get conflicting testimony that leaves us in a dilemma of who do we believe?

So it is a real problem, especially if you can't remember what happened 25 years ago. The Chairman and I came on the committee 25 years ago and I guess we haven't asked, or at least I haven't asked the proper questions, anyway.

We have looked back from Kazakhstan and elsewhere I guess a considerable amount of weapons-grade materials and it is stored right now at Oak Ridge. How soon is that going to be disposed of?

DISPOSAL OF HIGHLY ENRICHED URANIUM FROM KAZAKHSTAN

Mr. RUDY. We are in the process right now, in fact, the United States Enrichment Corporation went out for bids to commercial vendors to blend that material down. Those bids closed last Friday on the 10th of March, and we believe we will be able to select a bidder to blend this material down by the end of March. The material would then be able to be shipped out of Oak Ridge, Tennessee, by the early summer time frame and blending down to low enriched uranium could commence.

INTERIM STORAGE OF WEAPONS—USABLE FISSILE MATERIALS

Mr. MYERS. Now, in your testimony you testified that there are a consideration of five interim storage sites. Why do we need the five interim storage sites?

Mr. RUDY. The locations that we presently have for the storage of plutonium include five, and those are the Pantex plant, the Hanford site, the Savannah River site, the Idaho National Engineering Laboratory and the Y–12 plant in Oak Ridge. They presently have these materials. They are the sites where these materials exist right now. And so, as we look forward to the future, for the plutonium and highly enriched uranium, we are examining long-term storage options of whether we would maintain the storage at those sites and upgrade it or consolidate storage to fewer sites.

GEOLOGIC REPOSITORY

Mr. MYERS. Historically, because of some reason, we have always separated the civilian fuel, low-grade or enriched uranium, away from defense. Why? Does any other Nation in the world separate the two? Is there any reason whatsoever, other than that was what originally conceived, that we didn't want the Defense Department handling civilian, but why? Can we afford—why do we need to?

Mr. RUDY. Separation of the ultimate disposal of this kind of fuel? Under the Nuclear Waste Policy Act it was established that the repository would handle high-level waste and vitrified defense, and I am not familiar, Mr. Chairman, as to why the distinction needed to be made to keep military spent fuel out of our repository.

Mr. MYERS. Can you think of any reason why it should not be stored together? It is the same material, isn't it?

Mr. RUDY. No. Military fuel, particularly at a higher enrichment level, may cause you different engineering issues in terms of the repository, but——

Mr. MYERS. But aren't you going to reduce the military waste? You just talked about you are going to dilute it.

Mr. RUDY. Yes. And we would go to the "spent fuel standard". In fact, one of the key options we are looking at is to convert it and put it into spent fuel, mixed oxide spent fuel, which we believe is clearly taking the first step—removing it from a weapons-usable form where it presently is to a safer form as hard to get at, if you will, as that which is in commercial spent fuel. And we believe that there are paths forward for that spent fuel in a geologic repository.

Mr. MYERS. Thank you.

Mr. Riggs?

Mr. RIGGS. Thank you, Mr. Chairman. Mr. Rudy, I want to focus more on the long-term issue of nuclear waste disposal, and particularly in light of the recent controversy within the scientific community and the Department of Energy that has been reported in a series of articles in The *New York Times*, the most recent of which is yesterday's article, which I am sure you are familiar with—"Deadly nuclear waste piles up with no clear solution at hand." And then sort of a subheading here, "The stream of waste from civilian and military programs is now a flood."

And the first thing I want to do is I want to ask you, what steps your agency is taking to address this concern in light of the President's recent announcement of further reductions in our nuclear weapons stockpile.

Mr. RUDY. The Department is examining the theories and the proposals put forward in the study by Dr. Bowman of Los Alamos Laboratory. The predominant issue there relates to the existing inventories of spent fuel, which would be destined to be placed in a geologic repository. The materials which we are——

Mr. RIGGS. That is Yucca Mountain?

Mr. RUDY. Potentially Yucca Mountain, if it is proved to be safe and the appropriate place.

The materials we are speaking of are separated weapons-usable nuclear materials, which if we move them to the "spent fuel standard" to convert them through mixed oxide fuel and burn them in reactors would add only marginally to the amount of spent fuel already in this country [deleted].

If we took all of the surplus plutonium we have in the military, converted it to commercial-grade spent fuel, it would be [deleted] of the total spent fuel that this country has on the commercial side. There must be a path forward for that commercial spent fuel. The Nuclear Waste Policy Act indicates a geological repository as the appropriate means of disposal. The Department believes that the geologic disposal is appropriate and can be obtained, but the papers of Dr. Bowman are being reviewed.

PLUTONIUM REPROCESSING

Mr. RIGGS. Let me follow-up on that for just a moment, because I want to be sure I am hearing you correctly, because the article talks about the world's civil reactor work pressing down the separation path.

Mr. RUDY. Right.

Mr. RIGGS. It says, mainly, that of recycling the plutonium from spent fuel for use in breeder reactors.

Mr. RUDY. Correct.

Mr. RIGGS. Now, are you endorsing that concept of separation?

Mr. RUDY. No, Congressman, we are not endorsing that separation. We don't reprocess in this country. What the newspaper article is referring to is where foreign countries will take their commercial spent fuel, reprocess it, dissolve it and extract the plutonium and other materials and reutilize those fuels.

This country does not reprocess, so we do not add to the inventories of separated plutonium. On a global basis, that is a growing concern, because it is separated, weapons-usable materials. But domestically in this country we do not create additional plutonium from reprocessing. We don't reprocess.

Mr. RIGGS. Do you seek, as this article would tend to suggest, that there is a potential technological breakthrough where you would actually have waste heat from the process that could produce electricity?

Mr. RUDY. Waste heat from the process of burning the plutonium?

Mr. RIGGS. Yes.

Mr. RUDY. Certainly, if it is used in fuels and in reactors as it is in other countries, it does produce electricity. It produced heat and then electricity in this country in the 1960s and 1970s. In fact, some tests were done in commercial reactors utilizing plutonium in the form of MOX, mixed oxide fuel, in commercial reactors. It does produce commercial electricity.

Mr. RIGGS. Why have we moved away from that then? Aren't we still looking at that as a viable use of energy production?

Mr. RUDY. President Carter made the decision to no longer pursue reprocessing in this country principally because of the concerns of proliferation of separated plutonium.

Mr. RIGGS. Yet you have people, such as, the Nobel Laureate who is quoted in the article here, Dr. Carl Rubia—I hope I am pronouncing that correctly—an Italian physicist. It is a brilliant way of solving the world's most dangerous problem by transferring a liability into an asset. It means cleaning up at least part of the mess left over from the Cold War.

Mr. RUDY. There are proponents on either side. When we look at taking the separated weapons-usable materials we have presently, which are coming out of nuclear weapons, clearly moving them to a less weapons-usable form is a major improvement and an essential step.

We believe that they should be taken from that weapons-usable form and converted. One of the key options that we are looking at and we will be evaluating—from an environmental impact standpoint as well as costs, and schedule, and policy—is converting some of that material to spent fuel. We are also looking at other options to render it nonweapons-usable. Vitrification is a key example and/or emplacement in a geologic repository, a deep bore hole.

ADVANCED REACTOR CONCEPTS

Mr. RIGGS. Let me also ask you very specifically about another option or alternative form of nuclear waste disposal mentioned in the article, and that is the idea of special reactors, particularly the co-venture between General Atomics and the Russian Ministry of Atomic Energy.

The article says the plan has no backing from the Clinton administration, which in a policy move decided to abandon all work on reactors that would burn plutonium out of fear that they would, as you suggested earlier, foster global trade in the deadly substance.

Does that mean that the Clinton administration, then, would be opposed to this co-venture between General Atomics and Russia's Ministry of Atomic Energy?

Mr. RUDY. In our efforts at analyzing the options for the disposition of surplus plutonium, we have screened out, chosen to screen out, advanced reactors or what is referred to as deep-burn concepts for the mission of plutonium disposition. The principal reasons for that are the technical uncertainties. Many of these concepts, in particular the gas reactor which you mentioned, have no operational experience. One has not been built. They are being designed, but not built.

We have no operational base. There are new power conversion aspects to the proposed reactor which have never been integrated with the proposed reactor system. There is a lot of technical uncertainty which means time, which means cost, and would defer us from getting on with the job of dispositioning the plutonium.

Further, these reactors go beyond the "spent fuel standard." The technologies, as they have been designed, could burn substantial amounts of the plutonium when it is placed in the core. The "spent fuel standard", however, would be sufficient. The "spent fuel standard" being that which, for example, we presently would have in existing light water reactors. These other reactors go beyond that and that would not be necessary.

Mr. RIGGS. Mr. Chairman, let me ask, if you don't mind, of our staff, because I want to make sure I am clear, so this would be primarily for my own edification, but I want to clarify whether General Atomics is seeking funding from this committee for this particular project, the co-venture that I just mentioned with Russia's Ministry of Atomic Energy. Do we know?

We have in the past? But that is a project that in the past the committee has funded.

Mr. MYERS. Well, the high temperature gas reactors we have. I don't know about the other. I don't think we have, have we?

STAFF. I am not sure. I would have to ask.

Mr. RIGGS. Well, maybe we can look into that a little bit further.

Mr. MYERS. High temperature gas reactor, now the helium——

Mr. RUDY. In fact, Congress, in the budget of the Department last year, directed that certain funds be spent on examining advanced reactor concepts including the gas reactor disposition of plutonium and others——

Mr. RIGGS. Were those funds directed to the Department or——

Mr. RUDY. Yes.

Mr. RIGGS. And have those funds been expended?

Mr. RUDY. They are in the process of being expended, yes. The Gas Reactor Program goes back many years and in the last few years there have been changes to the concept which would include the burning of plutonium, so those funds have been directed to the Department in prior years. We are not proposing any such funds in the fissile materials disposition budget for the gas reactor.

Mr. RIGGS. In this——

Mr. RUDY. In this budget.

GEOLOGIC REPOSITORY

Mr. RIGGS. In your current request, okay.

So I guess what this conversation really does is it brings us back to the Department's position that the only feasible long-term disposal option is permanent burial underground. Am I understanding you correctly in that regard, Mr. Rudy?

Mr. RUDY. For the surplus weapons plutonium, we have yet to make a decision on the process and the mechanisms by which we would render it nonweapons-usable and then disposal. We are in the process of completing the environmental, technical and cost work for a variety of options. We are now down to 11 to make the decisions on the best path forth for disposition of these materials. If it turns out that a reactor option is the preferred option and the one that the department would choose, then, yes, that would be spent fuel which would find its way into a geologic repository.

Mr. RIGGS. Do you have any concern that the current controversy, particularly as reported in the national media, is going to stir up the antisentiments back home, that is to say in the State of Nevada. It is just going to—because it seems to me what this does is it kind of keeps the political controversy alive and festering.

Mr. RUDY. It certainly raises another political and public issue. But the fact would remain that there would still be significant quantities of commercial spent fuel in this country which would need to be managed in some way.

We believe, and under the Nuclear Waste Policy Act, we also believe that the path forward would be in a geologic repository. If for some reason that path were not available, there would still need to be ultimate action to that material.

Mr. RIGGS. Quite clearly, yes.

Mr. RUDY. Our position working on the separated weapons-usable material, should we choose to put it in spent fuel form, again, is that it would be a small percentage of that larger problem, if you will, which would need to be managed eventually.

STORAGE OF HIGH LEVEL NUCLEAR WASTE ON AMERICAN INDIAN TRIBAL LAND

Mr. RIGGS. I appreciate seeing that broad context. Let me ask you one other question, because this is a new wrinkle to this whole debate for me brought out in this article yesterday in The New York Times. Although I think I dimly recall hearing some mention of this development beforehand, this is really the first time I have seen it right in front of me in black and white, and that is the decision by a New Mexico Indian tribe to welcome the storage of high-level nuclear waste from commercial reactors on their reservation.

We were talking about tribal lands held in trust for this particular American Indian tribe by the United States of America. And I am wondering, apparently according to the article anyway, this would be a temporary dump, and yet it is opposed by the New Mexico State legislature and the State's congressional delegation, which would be a bipartisan delegation. What is happening in this area, and how do we bring oversight to bear on tribal lands of a sovereign Indian nation?

Mr. RUDY. Mr. Riggs, that would have to be a question that our Office of Civilian Radioactive Waste Management would be the more appropriate office to respond to that, and I would be pleased to take that for the record and get back to you on that.

Mr. RIGGS. Would you please?

Mr. RUDY. Yes, sir.

[The information follows:]

THE ROLE OF DOE/CONGRESSIONAL OVERSIGHT ON PRIVATE INTERIM STORAGE FACILITY INITIATIVES BY SOVEREIGN INDIAN NATIONS ON TRIBAL LANDS

Officials of the Mescalero Apache Tribe of New Mexico and representatives of a consortium of 33 nuclear power companies negotiated over the past year the terms of a tentative agreement that would allow the consortium to store spent nuclear fuel on the Mescalero Reservation.

The Tribe's proposal to construct an independent spent nuclear fuel storage facility is a private initiative on Native American Tribal land. The Department is not a party to, and has no role in this matter. The Nuclear Waste Policy Act of 1982, as amended, does not preclude the construction and operation of a spent nuclear fuel storage facility by a private party. Such a facility would have to be licensed under regulations promulgated by the Nuclear Regulatory Commission, an independent Federal agency responsible for regulating civilian nuclear activities. The facility would have to meet Nuclear Regulatory Commission requirements before it could be licensed, and would be regulated throughout its operation to assure compliance with public and worker safety and health standards, and environmental regulations.

Mr. RIGGS. Maybe while you are at it, maybe you could put my name next to the issue of long-term nuclear waste disposal and stockpile reduction at the Department of Energy. I think this is one of the most important matters that could come before this particular subcommittee, and it is a matter that I believe deserves a tremendous amount of further attention and discussion. And Mr. DeGrasse, did you want to make a comment?

Mr. DEGRASSE. I would just suggest that we will ask Dr. Dreyfus, the Director of the Office of Radioactive Waste Management—I think it would be appropriate for him—to visit you or discuss further some of your concerns. So I will bring this to his attention. He actually, since I had originally sort of been asked by the Secretary to help create the Office of Fissile Material Disposition, and we have worked together on this over the last year, Mr. Dreyfus, every time he sees me in the hall now after this set of articles has come up and has said, "You know, you have killed my dump finally." So he is a little sensitive certainly to the publicity that has arisen out of this particular article, set of articles.

It is a more complex picture here. We have, particularly in the case of the people who did this work at Los Alamos, people who had a particular interest in seeing issues raised with the repository, because they are seeking funding for accelerator disposition of waste. And so there is concern, obviously, whenever the salesman gets involved in the science as to how good the science is. So that is one thing that we might want to bring to your attention.

Mr. RIGGS. Okay. Well, we will look forward to that. But let me just close by saying that I really think this is a terribly important issue, and that we ought to keep it in the forefront of the discussion here, if not in the public consciousness.

You know, hopefully, we are living in a safer world where we can continue to make reductions in nuclear weapons stockpiles, but I think that that makes this issue all the more important and deserving of some real thought and long-term planning.

Let me add one other, pragmatic little concern, and that is that there are many Members of Congress who are actively discussing, as you well know these days, eliminating altogether the Department of Energy. And if this doesn't bring out the critical role and mission and importance of a Federal Department of Energy, I don't know what does.

Thank you, Mr. Chairman.

Mr. MYERS. Thank you, Frank. Thank you, again, very much for your testimony today. We each have a series of questions we will provide for the record, so we appreciate your cooperation.

Mr. RUDY. Yes, sir.

Mr. MYERS. We realize we have asked some questions today maybe you were not prepared to answer, but you had a little more answers than we had questions at that. So again, thank you very much for your testimony.

Mr. DeGrasse. Thank you very much for the opportunity.

Mr. Myers. The committee will stand adjourned until 10 o'clock tomorrow morning.

[The prepared statements of the witnesses and questions and answers for the record follow.]

FISSILE MATERIALS DISPOSITION PROGRAM

Mr. Myers: What does the President's recent announcement that he is declaring 200 tons of fissile material excess mean to this program?

Mr. Rudy: As a member of the Nuclear Weapons Council, The Department helped provide analysis and support for deliberations within the Council on the initial quantities of highly enriched uranium and plutonium in the U.S. stockpile that could be declared surplus to defense needs. Accordingly, the quantities which the President ordered be permanently withdrawn from the U.S. nuclear stockpile are within the scope of the Department's planning for materials disposition. The Department's Fissile Materials Disposition Program is responsible for the technical and management efforts to make and implement decisions on the long-term storage and disposition of the surplus fissile materials that are weapons-usable.

Mr. Meyers. How does the office coordinate with other Departmental organizations which have responsibility for fissile materials such as Defense Programs and Environmental Management?

Mr. Rudy. Coordination and communication among the Offices of Fissile Materials Disposition; Defense Programs; Environmental Management and other program offices which deal with nuclear matters is essential to assure progress and avoid duplication of efforts in fissile materials management within the Department. Towards this end, key policy issues and recommendations are routinely and formally reviewed and coordinated among these Departmental organizations prior to final decisions. Understanding and input to crosscutting program issues is enhanced through joint participation on working groups and project teams. Drafts of key correspondence are shared and program officials participate in each other's meetings, briefings and conference calls related to subjects of mutual interest, expertise or assigned responsibility. In addition, the Offices of Defense Programs, Environmental Management, Arms Control and National Security, Nuclear Energy and Fissile Materials Disposition report to the same individual-- the Under Secretary of Energy. The coordination of efforts is enhanced through a formal process of concurrence as well as frequent and informal staff contacts and sharing of program updates and issues.

Mr. Myers: Can you comment on the proposal to use Washington Public Power Supply System (WPPSS) reactors to burn plutonium?

Mr. Rudy: Several commercial light water reactor projects were suspended in advanced stages of construction in the late 1970's and early 1980's. These reactor projects potentially could be completed and converted to missions involving surplus plutonium disposition. One such private sector venture was referred to as the "Isaiah Project", in which two partially completed reactors in Washington State, WNP-1 on the Hanford Reservation and WNP-3 west of Olympia, would be completed. A separate proposal by the Washington Public Power Supply System (Supply System) suggested using the partially completed WNP-1 reactor in conjunction with an already operating reactor, WNP-2, both located on the Hanford Reservation.

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There already exists an adequate range of other reactor alternatives for the disposition of plutonium as evidenced by the proposal to consider use of WNP-2, an operating light water reactor. In total, there are over 60 operating light water reactors which could potentially serve the mission of surplus plutonium disposition.

In a letter to Senator Mark Hatfield dated January 10, 1995, Secretary of Energy Hazel O'Leary stated that in the Department's view, any decision to preserve or complete either WNP-1 or WNP-3 should be made by the operating utility (the Supply System) and its customer (Bonneville Power Administration) and that the decision should appropriately be based upon the need for, and economics of these units for the production of electricity for the region and not whether either unit might eventually contribute to the surplus plutonium disposition mission. The Supply System has subsequently decided to terminate continued funding of preservation activities for its partially completed units.

SALE OF HIGHLY ENRICHED URANIUM

Mr. Myers: Describe the Department's proposal to sell highly enriched uranium and receive $400 million of revenues in fiscal year 1996. What are the potential problems with the transaction or the timing?

Mr. Rudy: The Department proposes to transfer approximately 50 metric tons of surplus highly enriched uranium and other uranium materials to the United States Enrichment Corporation (USEC) for blend-down to low enriched uranium for subsequent use in commercial power reactors. When the United States Enrichment Corporation is privatized through sale, receipts from the sale would accrue to the U.S. Treasury. The total receipts at the time of sale would include an estimated $400 million from the transferred uranium materials.

There are a number of issues and factors that must be addressed to enable the transfer of the uranium and the successful privatization of USEC. These include completion of an environmental analysis as required by the National Environmental Policy Act for the transfer of the uranium materials and legal, financial, and commercial market assessments and decisions. Efforts are underway within the Department, USEC, and the Administration to address these issues.

OPTIONS FOR EXCESS PLUTONIUM DISPOSITION

Mr. Myers: Please describe the current options under consideration for disposing of excess plutonium inventories. What is the process for making a final determination on the method of disposal? When will the decision be made?

Mr. Rudy: The Department has recently completed a screening process that considered potential options for plutonium disposition and identified reasonable alternatives for a subsequent detailed evaluation to support a Record of Decision. A total of 37 options were considered, and 11 of these were identified as reasonable plutonium disposition alternatives. The 11 alternatives include two direct disposal options, four options that involve immobilization of the plutonium along with radionuclides to provide a radiation barrier, and five options for burning plutonium in nuclear reactors. Each of these options would render the plutonium as difficult to use in a weapon as the much greater quantity of residual plutonium contained in spent fuel from commercial reactors. The next phase of the decision process will include a detailed evaluation of the reasonable alternatives in a Programmatic Environmental Impact Statement (PEIS), along with parallel analyses addressing technical, schedule, economic and non-proliferation considerations. Under the current program schedule, this will result in the identification of preferred alternatives in the draft PEIS scheduled for December 1995 and a Record of Decision by August 1996.

"TRIPLE PLAY" REACTOR

Mr. Myers: Interest has been expressed in a "triple play" reactor which would make tritium, burn plutonium, and generate electricity. Can you discuss the feasibility, timing and economics of disposing of plutonium in this new reactor concept? Is it necessary to build a new reactor to burn plutonium or can plutonium fuel be used in existing reactors?

Mr. Rudy: A "triple play" or multi-purpose reactor, is one which would be capable of the production of tritium, disposition of plutonium, and generation of electricity. The Department is currently evaluating reactor technologies for the new tritium production source as well as for the multi-purpose mission of producing tritium and disposing of plutonium in the Programmatic Environmental Impact Statement for Tritium Supply and Recycling. The combination of environmental analysis in the tritium PEIS along with technical, nonproliferation, budgetary and economic analyses will form the basis for a decision on a multi-purpose reactor as early as the end of this year.

The Department is also planning to evaluate five additional reactor options for the mission of surplus plutonium disposition under the Programmatic Environmental Impact Statement for long-term storage and disposition of surplus fissile materials. If new reactors were to be selected for each mission (tritium production and plutonium disposition), combining the two missions in common reactors would save money. However, building a new reactor(s) would take several years (~12 - 15 yrs) and thus dictate the earliest start date for reactor disposition of surplus plutonium. If new reactors are not selected for both missions, there is essentially no savings with the "triple play" reactor. However, at this point in our analysis, it does not appear to be necessary to build new reactors to dispose of plutonium. There are over sixty existing U.S. light water reactors that are capable of contributing to this mission. In addition, the CANDU (Canadian) reactors may be viable options for plutonium disposition.

INVENTORY OF FISSILE MATERIALS

Mr. Myers: Please provide a chart showing the inventory of fissile materials by site and type of material.

Mr. Rudy. The attached table references all fissile materials owned by the United States Government. Those materials in the custody of the Department of Defense include the nuclear weapons stockpile and naval propulsion reactors. The nuclear weapons stockpile is comprised of active weapons, inactive weapons, and retired weapons waiting to be returned to the Department of Energy.

TABLE DELETED

ACCELERATOR TRANSMUTATION

Chairman Myers. Please describe the Accelerator Transmutation of Waste Program. What are the advantages or disadvantages of this approach? What funding was spent on this program in fiscal years 1994, 1995, and 1996?

Mr. Rudy. The Accelerator Transmutation of Waste (ATW) is a program that has been proposed by Los Alamos National Laboratory since approximately 1989. This program proposes to develop a particle accelerator to induce reactions with radionuclides contained in nuclear waste. These reactions or "transmutation" would create non-radioactive species. In addition to an accelerator component, the concept would require a significant chemical separations effort to partition waste materials before they are introduced into the accelerator. Additional waste separations would be required after irradiation of waste streams in an accelerator.

The advantages and disadvantages of this approach have been described in two recent reports. The most recent report was prepared by the U.S. General Accounting Office and is entitled "Developing Technology to Reduce Radioactive Waste May Take Decades and be Costly," GAO/RCED-94-16, December 1993. This report concluded that if transmutation could be proved technically and economically feasible, and if nuclear power continues to be used in the United States, then transmutation may have a role in a new generation of power-producing nuclear reactors that would burn their own waste. (page 38) The report concluded, however, that it appears not to be practical at this point to pursue transmutation primarily to address the existing radioactive waste problem. The second report was prepared by Lawrence Livermore National Laboratory at the request of the Department of Energy's Office of Civilian Radioactive Waste Management. It is entitled, "Impacts of New Developments in Partitioning and Transmutation of the Disposal of High Level Nuclear Waste in a Mined Geologic Repository," UCRL ID-109203, March 1992. This report provides an exhaustive analysis of partitioning and transmutation of waste by accelerators and nuclear reactors. The report has two principal conclusions: (1) partitioning-transmutation is neither an alternative to a current geologic disposal program nor essential to its success; and (2) there remain no cost or safety incentives to introduce partitioning-transmutation into the high level waste management system. (page 1-2)

As you are aware, a third major report on transmutation of nuclear waste is currently being completed by the National Academy of Sciences; this report will compare and evaluate the various transmutation concepts. The final report of this study will be issued later this year.

There is no direct DOE funding being spent on transmutation of waste program in fiscal years 1994, 1995, nor is any planned for fiscal year 1996. It is our understanding, however, that Los Alamos National Laboratory has used laboratory direct funds for approximately five years to promote the ATW concept. Should the NAS study provide a basis for funding transmutation in future years, we will, of course, revisit this funding decision.

ACCELERATOR CONVERSION OF PLUTONIUM

Mr. Myers: Please describe the accelerator conversion of plutonium program. What are the advantages or disadvantages of this approach? What funding was spent on this program in fiscal years 1994, 1995, and 1996?

Mr. Rudy: Accelerator based conversion (ABC) of plutonium would use a proton linear accelerator to increase the speed of protons which would collide with a heavy metal such as tungsten, and cause spallation neutrons to come off. These neutrons would be channeled to a sub-critical reactor where they would be used to support the conversion of plutonium to non-fissile material by fission. One such system would utilize a sub-critical molten salt reactor in which a slurry of certain salts, in which plutonium had been dissolved, would be fed into the reactor and circulated.

The key advantage of the accelerator-based conversion (ABC) concept is that over time it could destroy a large percentage of the plutonium. There are, however, significant technical issues and R&D which would need to be completed. This would equate to a long research and development program, extensive delay in starting the disposition of plutonium and high cost. In addition, the accelerator-based conversion concept of plutonium would result in at least the same amount of waste products as a reactor. Considerably more waste would be generated by processing operations. The technical uncertainty and risks regarding the ABC concept indicate many years of development work would be required to resolve issues before such a system could be relied on.

Funding within the Department for accelerator based conversion of plutonium was $1 million in each of the fiscal years 1994 and 1995. No funding is requested for accelerator destruction of plutonium in FY 1996. The 1996 proposal reflects the fact that given the lack of technical maturity and the attendant increased time and cost which would need to be incurred before the ABC alternatives could become available, the Department has chosen not to carry it forward for further analysis under the Programmatic Environmental Impact Statement for the long-term storage and disposition of surplus weapons-usable fissile materials.

PLUTONIUM RESOURCE CENTER

Mr. Myers: Please describe the role of the Plutonium Resource Center in Texas. What products did this center provide to the Department in fiscal year 1995? What is the funding level in fiscal years 1994, 1995, and 1996?

Mr. Rudy: The Plutonium Resource Center in Amarillo Texas was established under a cooperative agreement between the Department of Energy and the State of Texas in early FY 1995. The Center is comprised of a consortium of Texas Universities. To date, in addition to its start up efforts, the Center has focused on three principal areas of support. The first involves the establishment of a Senior Technical Review Group of independent, nationally recognized experts who support the Center in reviews of key issues, decisions, and work involved with the Department's fissile materials disposition program including review of the results of the initial screening of alternatives for the disposition of weapons-usable materials. The second area of activity by the Center involves support of the Joint U.S.-Russian Plutonium Disposition Study. The Center has the coordination lead for this joint study. The university consortium has assigned individuals to each of the technical teams to provide general support, technical input, and coordination for the joint study. Furthermore, the university consortium will provide funding for the Russian side of this joint study. Third, the Plutonium Resource Center has begun to develop a decision analysis methodology for decisions on surplus plutonium disposition technologies. The University of Texas has nationally recognized expertise in decision methodology. A team is evaluating the decisions that have to be made and the type of information that will have to be developed in the technical, schedule, cost, and other areas in order to provide the basis for decisions in the selection of the preferred alternatives and the record of decision for surplus plutonium disposition.

Other areas that are to be undertaken include: support in analysis of reactor alternatives for plutonium disposition; public outreach on fissile materials; environmental data collection and analysis; support of highly-enriched uranium vulnerability assessment efforts; and safety studies concerning the range of activities at the Pantex plant. In addition to the specific tasks providing support across all areas of the Fissile Materials Disposition Program, the Center serves to demonstrate the Department's interest in protecting the environment, health, and safety of populations adjacent to its sites and to provide financial assistance to the State to facilitate the State's exercise of its responsibilities to its citizens and the public in general. The Center will serve as an independent source of scientific and technical information on issues relating to the storage, disposition, potential utilization and transportation of plutonium, high explosives, and other hazardous materials generated from nuclear weapons dismantlement.

The Center was not formed until FY 1995. Accordingly, there were no FY 1994 funds directed at this effort. The funding for FY 1995 is $9 million and the funding request for FY 1996 is $10 million. The Plutonium Resource Center is assigned program work in various areas of the overall Fissile Materials Disposition Program.

FUNDING FOR TECHNICAL INTEGRATION, SUPPORT AND ASSOCIATED TECHNOLOGIES

Mr. Myers: Funding for technical integration, support and associated technologies increases significantly in fiscal year 1996. Please provide a detailed breakout of activities and funding for fiscal years 1994, 1995, and 1996.

Mr. Rudy: The funding for technical integration, support and associated technologies has increased from $13.8 million in FY 1995, the first year of the Fissile Materials Disposition Program, to a request for $19.7 million in FY 1996. This increase reflects the progress in the program as it moves from early planning and analysis to research and demonstration necessary to support a record of decision and its implementation in late 1996.

The specific activities of this effort include technologies that are common to various disposition alternatives such as the development of pit disassembly, plutonium conversion, and demonstration of demilitarization of pits. All disposition alternatives require these technologies as the initial step.

AMARILLO NATIONAL RESOURCE CENTER FOR PLUTONIUM

Mr. Chapman: Has DOE, within its $70 million budget request for fissile materials control and disposition within its Atomic Energy Defense Activities account, allocated $10 million for the Amarillo National Resource Center for Plutonium?

Mr. Rudy. Yes. The Department's fiscal year 1996 budget request for fissile materials disposition activities contains $10 million for the Amarillo National Resource Center for Plutonium. The Center is assigned program work in various areas of the overall Fissile Materials Disposition Program and is shown in a table which I would like to insert for the record. The information follows:

	($ in thousands)
Program Areas	FY 1996
Long-Term Storage	1,300
Disposition Options	2,200
Technical Integration and Associated Technologies	1,950
Center Management and Administration	2,550
Pantex Safety Studies	2,000
	$10,000

WORKER AND COMMUNITY TRANSITION

Mr. Myers. Describe the types of activities that are funded in this program.

Mr. DeGrasse. The Office of Worker and Community Transition provides policy guidance and oversight of all the Department's activities to mitigate the effects of work force reductions on the workers and communities near our facilities. Our budget provides for the costs of work force restructuring associated with the cessation of nuclear weapons production and the subsequent reduction in our Defense Programs. We depend on program organizations to fund adjustment assistance related to increasing efficiency.

Mr. Myers. How do these activities differ from the economic development and worker conversion activities funded in the Environmental Management program?

Mr. DeGrasse. The activities are very similar in many cases. The difference centers on the reasons for the work force reduction. The Department has determined that in cases where the reductions are attributable to the cessation of nuclear weapons production it is appropriate to fund the activities in a separately identified budget line consistent with the requirements of Section 3161 of the National Defense Authorization Act of Fiscal Year 1993. In cases where the reductions stem from business decisions as a result of increased efficiency, budget reductions or changed mission other than nuclear weapons production the Secretary judged it appropriate to fund those activities as a cost of business within the affected program budget.

Mr. Myers. Will any funds in this program be used to augment funding for the recently announced layoffs of 18,000 employees at Environmental Management sites?

Mr. DeGrasse. The reduction of 19,000 employees over Fiscal Years 1995 and 1996 at Department of Energy sites includes both employees whose separation is a result of the termination of the nuclear production mission as well as workers who will be separated to meet budget and efficiency requirements in the Environmental Management program. For instance, most of the employees to be separated at the Nevada Test Site, as well as many workers at Pinellas, Rocky Flats, Mound, and Savannah River, are the result of the end of the nuclear production mission. The budget request of $100 million reflects our best estimate of the costs associated with these workers. The up to $200 million identified in the Environmental Management budget for this contingency reflects expected costs to that program.

Mr. Myers. What is the total amount of funding provided to each site since the program was initiated?

Mr. DeGrasse. Table 1 included with my prepared statement details expenditures to date on work force restructuring plans at the various sites across the complex. Work force restructuring plans associated with reductions that will occur in Fiscal Year 1995 and 1996 are currently under development and review and no detailed cost data is available for them at this time. I am confident that we will be able to execute these plans within the target of an average $25,000 per affected employee.

Mr. Myers. Provide a chart showing by site the number of employee reductions in fiscal year 1994, 1995, and 1996, the costs of the program, and the average cost per employee.

Mr. DeGrasse. Table 2 included with my prepared statement details the expected reductions at each site between fiscal years 1994-1996. Table 3 describes the employment trends at each site since 1988. As I have noted, the specific costs associated with past reductions are reflected in table 1 and data is not yet available for plans currently under review for fiscal years 1995 and 1996, but we fully expect them to average no more than the target of $25,000 per separated employee.

Mr. Myers. Provide a list of all projects and the amount of funding for each economic development initiative funded in fiscal years 1994, 1995, and proposed for 1996.

Mr. DeGrasse. I am providing a listing of the economic development projects funded to date which I would like to insert in the record. Our anticipation is that for fiscal year 1996 no additional economic development projects will be funded within the $100 million we are requesting beyond planning grants and technical assistance--roughly $5 million. This reflects our judgment that the limited funds we are requesting can best be applied directly to work force restructuring. The information follows:

ECONOMIC DEVELOPMENT PROJECTS
($ in thousands)

Site/Project	FY 1994	FY 1995
Hanford Site		
Agri-Business Technology Commercialization/Development Ctr	$ 100	$
Tri-City Industrial Development Council	114	113
Hanford Economic Transition Initiative		6,000*
Idaho National Engineering Laboratory		
Eastern Idaho Economic Development Council Planning Grant		325
Kansas City Plant		
Near Term Initiatives	700	
Mound Plant		
Economic Development Seed Money	4,000	
Community Reuse Org. Planning Grant	500	
City of Miamisburg Economic Development Plan	5,950	4,100
Nevada Test Site		
Communication System for State Economic Development Authorities	200	
Solar Enterprise Zone Project		3,000
Oak Ridge Reservation		
Manufacturing Skills Campus	17,302	
Manufacturing Technology Centers	10,000	
Technology 2020	1,500	
Regional Eco. Development Initiatives	2,850	
Pinellas Plant		
Economic Development Seed Money	4,000	
Tampa Bay Transition Task Force	500	
Near Term Initiatives	6,000	
Rocky Flats Plant		
Economic Development Seed Money	4,000	
Community Assistance	500	
National Conversion Pilot Project	500	9,000
Assess NCPP		83
Savannah River Site		
Community Assistance	2,810	

* funding from EM facilities transition budget

AVERAGE COST FOR PROPOSED EM LAYOFFS

Mr. Myers. The Department has indicated that some force reductions cost significantly more than the $25,000 average assumed for this program. What is the average cost expected to be for the proposed layoffs at Environmental Management facilities?

Mr. DeGrasse. As Table 1 included in my prepared statement indicates, work force restructuring plans to date have averaged between $9,103 and $70,630 at the different sites. The overall average is $26,762. These differences reflect variations in seniority and salary of positions identified as excess to future mission requirements, as well as different incentives provided to minimize adverse impacts on workers. One of the major factors in driving up average costs is the use of early retirement incentives, which have averaged to date approximately $50,000 for that component alone. Other components have averaged considerably less, bringing the overall average to the $26,000 figure. Our expectation is that plans that will be implemented in the coming fiscal years will utilize this option less frequently, and will have fewer employees who are eligible, since many sites have offered this option in recent years. As a result we are confident that the average cost for proposed layoffs at Environmental Management facilities will come within our $25,000 average cost goal.

INTERNATIONAL CENTER FOR APPLIED RESEARCH

Mr. Myers. What is the status of funding for the International Center for Applied Research?

Mr. DeGrasse. The Department has requested a reprogramming of funds to support the International Center for Applied Research.

CONTINUATION OF PROGRAM

Mr. Myers. This program was created in 1993 as a result of the change in work force as defense nuclear production facilities were closed. The bulk of that effort has been completed. Why is the Department continuing to request funding for this activity?

Mr. DeGrasse. As I noted earlier, a portion of the approximately 19,000 employees we expect to separate during the current and coming fiscal year are directly related to the cessation of the defense production mission. Whereas in the past this budget line reflected the bulk of the Department's overall spending on work force restructuring, in the 1996 budget request it reflects only about one third of what we expect to spend.

WORKER RETRAINING

Mr. Myers. How many workers have been retrained? Have all those who received training found new jobs?

Mr. DeGrasse. In the major restructuring efforts undertaken in 1993 and 1994, which is the latest data we have available, approximately 2,600 employees received retraining either in the form of tuition assistance, or to qualify for other positions with Department of Energy contractors. One of the most difficult aspects of work force restructuring, as evidenced by experience in the private sector, is tracking separated employees to determine how quickly they found new employment and at what compensation level. Our office is developing a comprehensive tracking system to provide us with the best available data beginning with the Kansas City site which experienced major reductions in 1994. We do have some preliminary data that I can share. For instance, 280 employees were reassigned to other jobs with Martin Marietta at the Oak Ridge site as a result of training provided. At Mound, in Ohio, 108 employees specifically found employment as a direct result of outplacement assistance provided at that site.

Statement of Gregory P. Rudy
Acting Director
Office of Fissile Materials Disposition
U.S. Department of Energy
FY 1996 Appropriations Hearings

INTRODUCTION

Mr. Chairman and members of the Committee, I am pleased to appear before you to discuss the Department of Energy's Fiscal Year 1996 budget request for Fissile Materials Disposition.

Today the community of nations faces an evolving nuclear danger that in many ways is more onerous than the nuclear danger we all lived under through the years of the Cold War. During the Cold War the principal nuclear danger was nuclear war between the superpowers. The danger was clear, visible, and well characterized. The end of the Cold War has brought the arms and nuclear materials production race to a close between the superpowers and, as a result, significant quantities of plutonium and highly enriched uranium have become surplus to defense needs in both the U.S. and Russia. Continued implementation of arms reduction agreements will result in further weapons dismantlements and increases in surplus stockpiles of weapons-usable fissile materials.

With the collapse of the Soviet Union and the economic and social challenges faced by the newly forming democracies of its former states, there is a serious risk of nuclear proliferation from these growing stockpiles. Nuclear weapons or materials could fall into the hands of terrorists or non-nuclear nations through theft or diversion of these fissile materials in the former Soviet states. The National Academy of Sciences report on the management and disposition of excess weapons plutonium characterized this as a "clear and present danger". This nuclear danger is in many ways more diffuse, harder to manage and more dangerous than the nuclear tensions of the Cold War era.

In response to the growing threat of nuclear proliferation, the Administration has established a comprehensive nonproliferation policy and framework for action. Consistent with the President's Nonproliferation and Export Control Policy of September 1993, the focus of our nonproliferation efforts is five-fold: secure nuclear materials in the former Soviet Union; assure safe, secure long-term storage and disposition of surplus fissile materials; establish transparent and irreversible nuclear reductions; strengthen the nuclear nonproliferation regime; and control nuclear exports.

The Department of Energy's national security programs and its national laboratories are contributing unique scientific and technological skills and facilities to support U.S. efforts within each of these areas. We are applying our expertise in the development and implementation of improved systems for the control and disposition of nuclear materials, in both a domestic and international context. The very source of nuclear weapons and weapons-usable fissile materials development is also the center of the scientific and technological effort to help contain and minimize the threat of nuclear proliferation. We have a clear understanding of the sense of urgency for this mission, and we have the ability and resolve to accomplish it.

THE DEPARTMENT'S PROGRAM FOR FISSILE MATERIALS DISPOSITION

Within the Department of Energy, the Fissile Materials Disposition Program directs the Department's technical and management efforts aimed at providing for the safe, secure, environmentally sound long-term storage of all weapons-usable fissile materials and the disposition of weapons-usable fissile materials declared surplus to our national defense needs. The Program's efforts include technical, schedule, cost, and environmental analyses, as well as research and development necessary to support and then implement long-term storage and disposition decisions. For Fiscal Year 1996, the budget request for this Program is $70 million which will be discussed later in the testimony. The sections which follow describe the current and planned activities for the Department's Fissile Materials Disposition Program.

Last year, as a member of the Nuclear Weapons Council, the Department helped provide analysis and support for deliberations within the Council on the initial quantities of highly enriched uranium and plutonium in the U.S. stockpile that could be declared surplus to defense needs. On March 1st, to further demonstrate commitment to the goals of the Nuclear Nonproliferation Treaty, the President announced that he has ordered that 200 tons of fissile material (plutonium and highly enriched uranium) be permanently withdrawn from the U.S. nuclear stockpile. This is in addition to the 10 tons of highly enriched uranium made available last year for international safeguards at the Oak Ridge, Y-12 facility. The Department's Fissile Materials Disposition Program provides the technical and management focus to make and implement decisions on the long-term storage and disposition of the directly weapons-usable fissile materials.

The Department's Fissile Materials Disposition Program also provides the lead technical support to the President's Interagency Working Group on Plutonium Disposition. The Interagency Working Group coordinates the U.S. Government's evaluation of options for the disposition of surplus plutonium taking into account national and international security and policy considerations. The Working Group is co-chaired by the White House Office of Science and Technology Policy and the National Security Council. In addition to the Department of Energy, the working group includes the Department of State, the Arms Control and Disarmament Agency, the Office of the Secretary of Defense, the Office of the Joint Chiefs of Staff, the Environmental Protection Agency, the Defense Nuclear Facilities Safety Board, the Nuclear Regulatory Commission and the Office of Management and Budget. As directed by the President, efforts of the Interagency Working Group include conducting joint technical studies with Russia concerning disposition options for surplus plutonium. The Department of Energy has the technical lead for these joint U.S./Russian studies.

DEFINING THE PATH FORWARD FOR LONG-TERM STORAGE & DISPOSITION

The Program's efforts are focused on completing the analyses and research necessary to enable informed decisions on long-term storage and disposition of surplus fissile materials. The Program is completing technical, schedule, and cost analyses and environmental analyses consistent with the National Environmental Policy Act. The results of the environmental analyses together with information from technical and economic studies, national policy objectives, and public input will form the basis for Record(s) of Decision regarding the long-term storage of all weapons-usable fissile materials and the disposition of weapons-usable fissile materials declared surplus to national defense needs.

ANALYSES UNDER THE NATIONAL ENVIRONMENTAL POLICY ACT

In June of last year, the Department issued a Notice of Intent (NOI) to prepare a Programmatic Environmental Impact Statement (PEIS) on the storage and disposition of fissile materials. As part of this effort, the Department announced its intent to hold public meetings to assist in determining the appropriate scope of the PEIS. These scoping efforts included a series of public meetings which provided for substantive dialogue, and direct public and industry involvement in the formulation of the scope of the PEIS. In total, 12 scoping meetings were held across the country between August and October of 1994. These scoping meetings were attended by over 1,200 attendees and generated thousands of comments and suggestions regarding the proposed scope of the PEIS. In addition, numerous written comments were received. Subsequent to the formal scoping meetings, separate public meetings focusing on plutonium disposition options and highly enriched uranium disposition options were held. These meetings were likewise well attended by the public and industry and served to advance the dialogue on fissile materials storage and disposition.

STANDARDS FOR MANAGING THE RISKS OF SURPLUS FISSILE MATERIALS

At the beginning of the scoping process, the Department noted its intent to use the National Academy of Sciences report, Management and Disposition of Excess Weapons Plutonium, as the starting point for evaluating the alternatives for the long-term storage and disposition of fissile materials. In its report, the Academy recommended standards for managing the risks associated with surplus weapons plutonium. The Department obtained public comment on the appropriateness of these standards during its PEIS scoping efforts. The standards noted by the National Academy of Sciences include:

> **The Stored Weapons Standard:** The high standards of security and accounting applied to storage of nuclear weapons should be maintained for weapons-usable fissile materials throughout the process of dismantlement, storage and disposition. The Academy concluded that storage should not be extended indefinitely because of nonproliferation risks and the negative impact that it would have on arms reduction objectives.

The Spent Fuel Standard: Options for long-term disposition of plutonium should seek to meet a "spent-fuel standard" in which the plutonium is made as inaccessible for weapons use as the much larger and growing quantity of plutonium that exists in spent nuclear fuel from commercial power reactors.

For world-wide context, slightly more than 100 metric tons of separated plutonium are in commercial stockpiles today. Projections show that the rate of use of this plutonium will catch up to the rate of separation at the earliest in the year 2000, with a peak accumulation of about 150 tons of separated plutonium remaining in commercial stockpiles. Annually, approximately 70 metric tons of plutonium is produced in world-wide commercial reactor operations. By the year 2000, a total of approximately 1,390 metric tons of plutonium will have been produced in the spent fuel of commercial reactors. This compares to an approximate total of 100 metric tons of surplus plutonium in U.S. and Russian weapons stockpiles. If all the surplus plutonium were converted to spent fuel in reactors, it would contribute only a few percent to the plutonium in spent fuel.

CRITERIA FOR DETERMINING REASONABLE LONG-TERM STORAGE & DISPOSITION ALTERNATIVES

In the scoping and subsequent public meetings, the Department also received input on proposed screening criteria for determining the reasonable alternatives that should be further evaluated in the PEIS for long-term storage and disposition of weapons-usable fissile materials. The screening criteria for long-term storage and disposition options are based on the policy objectives articulated in the President's Nonproliferation and Export Control Policy of September 1993 and the January 1994 "Agreement between the United States and Russia on Nonproliferation of Weapons of Mass Destruction and the Means of Their Delivery" as well as the analytical framework established by the National Academy of Sciences in their study on the disposition of excess weapons plutonium. These criteria serve to address the growing nuclear danger of surplus fissile materials in Russia in a manner that also meets U.S. domestic and policy interests and provides visible evidence of irreversible disarmament. A summarized listing of the screening criteria follows (the order does not reflect relative evaluation importance):

Resistance to Theft or Diversion by Unauthorized Parties: Each step in the process must be capable of providing for comprehensive protection and control of weapons-usable fissile materials.

Resistance to Retrieval, Extraction and Reuse by the Host Nation (disposition only): The surplus material must be made highly resistant to potential reuse in weapons to reduce the reliance on institutional controls and demonstrate that arms reductions will not be easily reversed.

Technical Viability: There should be a high degree of confidence that a facility and site infrastructure can provide storage of nuclear components and materials for at least 50 years;

or in the case of disposition, there should be a high degree of confidence that the disposition alternative will be technically successful.

Environmental, Safety and Health (ES&H) Compliance: High standards of public and worker health and safety, and environmental protection must be met, and significant new burdens should not be created.

Cost Effectiveness: The option should be accomplished in a cost-effective manner.

Timeliness: Long-term storage should be implemented in a timely manner; and for disposition, the time that the materials remain in weapons-usable form should be minimized.

Fostering Progress and Cooperation With Russia and Other Countries: The options must establish appropriate standards for the storage and/or disposition of international weapons-usable material inventories, support negotiations for bilateral or multi-lateral reductions in these materials, and allow for international verification.

Public and Institutional Acceptance: An alternative should be able to muster a broad and sustainable consensus.

Additional Benefit (disposition only): The ability to leverage government investments for disposition of surplus materials to contribute to other national or international initiatives should be considered.

The formal PEIS scoping process and subsequent public meetings served to inform the Department on the appropriateness of the spent fuel standard and the screening criteria as a guide for further evaluations and analyses of long-term storage and disposition options. This scoping process also underscored the strong public support for starting and completing the fissile materials disposition mission on an urgent basis promptly.

DISPOSITION OF SURPLUS HIGHLY ENRICHED URANIUM

In the course of the PEIS public scoping process and through subsequent meetings with the public and industry on highly enriched uranium (HEU) disposition, the Department concluded that it would be more appropriate to analyze the environmental impacts of the disposition of surplus highly enriched uranium separate from the environmental analysis of plutonium disposition options. Surplus highly enriched uranium can be rendered non-weapons-usable by blending it down to low enriched uranium. This is the most rapid path for neutralizing the proliferation threat of surplus highly enriched uranium consistent with the President's Nonproliferation Policy. This would also demonstrate the United States' nonproliferation commitment to other nations and is consistent with the course of action initiated by the U.S. and now underway in Russia to reduce their highly enriched uranium stockpiles. The blending of HEU does not require further study or technology development and many of the facilities needed to perform the required blending operations already exist. Once blended down, some of this surplus uranium could be used in commercial reactor fuel. Decisions on surplus HEU disposition do not impact or preclude other decisions which may be made regarding disposition of surplus plutonium. Thus, an environmental analysis of this proposed course of action on HEU disposition can be accomplished on an expedited basis.

The Department held a public meeting on November 10, 1994, to obtain comments on the approach of preparing a separate environmental analysis for disposition of surplus highly enriched uranium. While many views were expressed in this meeting, there was substantial support for proceeding with a separate environmental analysis of highly enriched uranium disposition. We believe that an Environmental Impact Statement (EIS) can be completed on a significantly shorter schedule than the Programmatic Environmental Impact Statement. This EIS will evaluate three alternatives for surplus highly enriched uranium disposition: (1) continued storage as highly enriched uranium; (2) blend-down to low enriched uranium for use in commercial reactors; and (3) blend-down and disposal as waste. Accordingly, the Department will soon issue a formal notice of this process to prepare an Environmental Impact Statement on the Disposition of Surplus Highly Enriched Uranium. The draft EIS will be published this summer with a final EIS and subsequent Record of Decision following by early 1996.

TRANSFER OF SURPLUS HIGHLY ENRICHED URANIUM TO THE UNITED STATES ENRICHMENT CORPORATION

This EIS and subsequent Record of Decision will also address the proposed transfer to the United States Enrichment Corporation (USEC) of approximately 50 metric tons of highly enriched uranium and other uranium materials which have been declared surplus to national defense needs and can be blended together to yield commercially-usable low enriched uranium. When the United States Enrichment Corporation is privatized through sale, receipts from the sale will accrue to the U.S. Treasury. This will include an estimated $400 million from sale of the surplus highly enriched uranium and other uranium. We will continue to work with USEC and U.S. industry to develop cost effective and innovative methods to disposition the surplus highly enriched uranium in a safe, secure, environmentally sound manner. Successful efforts in this regard will directly advance our nonproliferation objectives, reduce stockpiles and associated safeguards and storage requirements, and provide financial returns to the U.S. Treasury.

LONG-TERM STORAGE OF ALL FISSILE MATERIALS AND DISPOSITION OF SURPLUS PLUTONIUM

The Department used the input received during the public scoping meetings, technical analyses by the National Laboratories and industry, and review within the Department and the Interagency Working Group on Plutonium Disposition to assess five options for long term storage of weapons-usable fissile materials and 37 options for the disposition of surplus plutonium. As a result, the Department has identified a range of reasonable long-term storage and surplus plutonium disposition options for further evaluation in the PEIS. A discussion of the range of options and the schedule for the PEIS follows:

LONG-TERM STORAGE

Until final disposition can be implemented, surplus fissile materials must be stored in a safe, secure and environmentally sound manner which also protects worker and public health. The PEIS will evaluate environmental impacts of alternatives for long-term storage of all plutonium, highly enriched uranium required for national defense purposes, and other weapons-usable fissile materials. This primarily includes materials to be retained for the strategic stockpile, reserved for naval nuclear propulsion, or retained for other programmatic needs, as well as surplus quantities of plutonium. Alternatives being assessed for long-term storage include: (1) continued storage in existing facilities (no action alternative assessed under NEPA); (2) upgrade of certain interim storage facilities; and (3) consolidation at DOE site(s).

Under the upgrade alternative, certain existing interim storage facilities would be brought into compliance with DOE standards for nuclear material storage. Five candidate sites are being considered for this upgrade alternative: Idaho National Engineering Laboratory, Oak Ridge, Pantex, Hanford, and Savannah River. This alternative would include the potential for some limited consolidation of weapons-usable fissile materials at these sites to reduce the total number of sites and overall costs associated with this storage. Under this alternative, the Rocky Flats site would no longer be considered for long-term storage of weapons-usable plutonium as it is presently being phased-out of all nuclear work.

Under the consolidation alternative, one or more new storage facility(s) would be constructed to store current and future DOE weapons-usable fissile material inventories. Six candidate sites for a new consolidated long-term storage facility are being considered: Idaho National Engineering Laboratory, Nevada Test Site, Oak Ridge, Pantex, Hanford, and Savannah River.

The PEIS analyses will provide the environmental information to support a Record of Decision (ROD) on whether to upgrade existing storage facilities or to build new, consolidated storage facilities for the long-term storage of weapons-usable fissile materials. The PEIS will also support a decision on the location of any new, consolidated storage facilities. The subsequent decisions will also take into account technical, nonproliferation, budgetary and economic considerations as outlined in the President's Nonproliferation and Export Control Policy. The Department's implementation of long-term storage decisions will promptly follow its Record of Decision.

SURPLUS PLUTONIUM DISPOSITION

Technically viable and available alternatives which can achieve the spent fuel standard are appropriate for further evaluation as surplus plutonium disposition options under the Programmatic Environmental Impact Statement. Since such options have a path forward for ultimate disposal along with spent fuel from commercial nuclear power plants and defense high level waste, options that achieve the spent fuel standard are adequate and would not require additional steps or processes to increase the level of proliferation resistance. Options which go beyond the spent fuel standard, such as deep burn reactors and accelerators would require substantial additional research and development, with attendant increased costs and time, in order to provide assurance of technical viability and ultimate disposal.

Accordingly, from the 37 disposition options initially identified, 11 have been selected for further evaluation in the PEIS. All of these plutonium disposition alternatives would have paths forward for ultimate disposal, either in a high-level waste repository or in a deep borehole. Five involve reactor options; four involve immobilization; and two involve direct geologic disposal. In addition, under the Programmatic Environmental Impact Statement for Tritium Supply and Recycling, the Department is currently evaluating additional reactor technologies for the new tritium production supply as well as for the multi-purpose mission of producing tritium and disposing of plutonium. A draft of the Programmatic Environmental Impact Statement for Tritium Supply and Recycling was issued by the Department at the end of February. The combination of environmental analysis in the tritium PEIS along with technical, nonproliferation, budgetary and economic analyses will form the basis for a decision on a multi-purpose reactor as early as the end of this year. The decision on a multi-purpose reactor will therefore be made by the Department in the context of its Record of Decision on a new tritium supply source.

Subsequently, the environmental information from the PEIS on long-term storage and disposition of plutonium as well as technical, nonproliferation, budgetary and economic analyses will factor into a Record of Decision on surplus plutonium disposition at the end of 1996. The Secretary of Energy, with interagency coordination, will issue the Record of Decision. A decision to commence implementation will be made in a broad domestic and international context, involve other executive branch agencies, and will ultimately reside with the President. The Department's technical efforts and analyses and its Record of Decision will provide the essential foundation to afford the President the credible basis and flexibility to initiate implementation of disposition efforts either multilaterally or bilaterally through negotiations, or unilaterally as an example to other nations. The implementation of the decision will be carried out in a manner that ensures that the surplus plutonium is subject to the highest standards of safety, security, and international accountability.

PEIS SCHEDULE

Within the next several weeks, the Department will issue the Implementation Plan (IP) for the PEIS for long-term storage of weapons-usable fissile materials and disposition of surplus plutonium. The implementation plan will identify those options which will continue to be evaluated in the PEIS. A draft of the PEIS will be made available for public comment by the end of this year. Subsequent to the release of the draft PEIS, public meetings will be held and a final PEIS and subsequent Record of Decision will follow near the end of FY 1996.

I would now like to discuss other key Program efforts that are contributing to this Nation's nonproliferation objectives and helping to reduce the nuclear danger, followed by specific measures that we will use to evaluate program performance during FY 1996.

OTHER KEY PROGRAM EFFORTS

PROJECT SAPPHIRE

Last November, then-secret Project Sapphire concluded with the arrival of approximately 600 kilograms of highly enriched uranium from the Ulba Metallurgical Plant in Kazakhstan for safe storage at the Department's Oak Ridge facility in Tennessee pending blend-down to low enriched uranium. The basis for this bold action was established by the President in his September 1993, Policy on Nonproliferation and Export Control. Part of this policy calls for U.S. action to pursue the purchase of HEU from the Former Soviet Union and other countries and its conversion to peaceful use as reactor fuel.

Left over from the Soviet era, this cache of weapons-grade uranium in Kazakhstan had been vulnerable to acquisition by parties who could use it to build nuclear weapons. A 27 member team of Department experts, with approximately 120 tons of equipment, flew to Kazakhstan in early October to repackage the material for safe transport and secure storage in the United States. The uranium was transported to the Y-12 facility at Oak Ridge for interim storage until it is ready for conversion to peaceful use as reactor fuel. This effort is a testimony to the skills, courage and dedication of all the people involved.

The Department's Office of Fissile Materials Disposition is coordinating efforts with the United States Enrichment Corporation to seek commercial bids to blend this material down to low enriched uranium for use in commercial nuclear power plant fuel. A request for proposals was issued on February 7 of this year and a bidders conference was held at Oak Ridge on February 16. Bids for the blend-down closed on March 10 and the winning bid will be selected later this month. Prior to proceeding with disposition actions, an Environmental Assessment will be completed to confirm that there are no significant environmental impacts.

PROGRESS IN JOINT TECHNICAL STUDIES WITH RUSSIA ON THE DISPOSITION OF SURPLUS PLUTONIUM

In their January 1994, Summit in Moscow, Presidents Clinton and Yeltsin agreed to task their experts to study jointly options for the long-term disposition of plutonium, taking into account the issues of nonproliferation, environmental protection, safety, and technical and economic factors. Under the leadership of the Interagency Working Group on Plutonium Disposition, an initial meeting was held in Moscow on May, 1994 to establish the framework for this effort. The Department of Energy, supported by its National Laboratories, have assumed the lead technical role in supporting this joint effort.

At the end of January of this year specialists from the U.S. and Russia met at the Los Alamos National Laboratory for a three day exchange of technical presentations on scientific research that has been conducted on possible plutonium disposition alternatives and on promising prospective investigations. During this meeting, the U.S. and Russian sides reviewed the standards and decision criteria for plutonium disposition. Both sides agreed to conduct joint work to develop consistent comparisons of various alternatives for the disposition of plutonium, taking into account the factors noted in the Summit statement of the two Presidents. The sides agreed that their joint activities include a series of technical visits to occur in the course of the technical group's work. A visit to the TA-55 plutonium handling facility at Los Alamos National Laboratory occurred on January 25 as the first of these planned exchanges. This initial exchange provided the opportunity to share with Russian technical counterparts, advanced practices and procedures for plutonium handling. The meeting and facility visit also served to help strengthen the growing spirit of trust between our nations. The joint technical studies will continue into FY 1996 and help maintain productive dialogue with Russia on plutonium disposition alternatives.

MEASURING PERFORMANCE IN FY 1996

The focus of our fissile materials disposition efforts in FY 1996 remains centered on advancing U.S. nonproliferation objectives. In FY 1996, we will measure our performance by the thoroughness and timely completion of the technical, cost and schedule analyses and the Program's NEPA analyses on long-term storage and disposition of fissile materials. The Department will complete the EIS on disposition of surplus highly enriched uranium and the PEIS on long-term storage and disposition of other weapons-usable fissile materials and issue records of decision. We will initiate the technical and design work necessary to implement decisions on both long-term storage and disposition. Additional performance measures include the establishment of a working dialogue and completion of joint technical studies with Russia on fissile materials disposition options.

We will also gauge our performance by the quantities of surplus highly enriched uranium that will be in the process of conversion to peaceful use as reactor fuel, and we will work with USEC and U.S. industry regarding alternatives to blend down the highly enriched uranium proposed to be transferred to the Corporation in FY 1996. In this regard, our efforts in FY 1996 can also provide measurable returns to the taxpayer on the funds being invested in this program. When the United States Enrichment Corporation is privatized through sale, the U.S. Treasury will receive the receipts of the proposed sale which would include an estimated $400 million from the surplus highly enriched uranium and other uranium which the Department proposes to transfer to USEC. In the end, our efforts to dispose of the surplus materials and provide for its efficient and environmentally sound long-term storage will result in savings from reduced safeguards and security costs and improved environment, safety and health performance.

We appreciate your past and continuing support of these important efforts. The balance of my statement covers the Fissile Materials Disposition Program's budget request in more detail.

FISCAL YEAR 1996 BUDGET REQUEST

The Fiscal Year 1996 budget request for the Fissile Materials Disposition Program (MD) totals \$70.0 million in new spending authority as reflected in the following table.

FISSILE MATERIALS DISPOSITION
FY 1996 CONGRESSIONAL BUDGET
(DOLLARS IN MILLIONS)

PROGRAM ACTIVITY	FY 1996 REQUEST
LONG-TERM STORAGE OPTIONS	10.9
DISPOSITION OPTIONS	21.7
TECHNICAL INTEGRATION, SUPPORT & ASSOCIATED TECHNOLOGIES	19.7
NEPA COMPLIANCE	9.0
PROGRAM MANAGEMENT	6.7
PANTEX SAFETY STUDIES	2.0
TOTAL	\$70.0

LONG-TERM STORAGE OPTIONS

Work on the evaluation of long-term storage options for weapons-usable fissile materials includes the preparation and evaluation of facility designs for long-term storage of plutonium, highly-enriched uranium and U_{233} in order to meet the stored weapons standard for these materials and to fully comply with environment, safety and health standards. The stored weapons standard would maintain the high standards of security and accounting applied to the storage of nuclear weapons for weapons-usable fissile materials throughout the process of dismantlement, storage and disposition.

Alternatives being assessed for long-term storage include: (1) no action (a baseline condition assessed under NEPA); (2) upgrade of certain interim storage facilities; and (3) consolidation at DOE site(s). The results of the environmental analysis in the Programmatic Environmental Impact Statement combined with information from technical and economic studies and national policy objectives will form the basis for a Record of Decision in 1996 regarding which long term storage and disposition options the Department will employ.

The FY 1996 funding request for long-term storage options is $10.9 million of operating expenses to begin the conceptual design activities for upgraded and new plutonium and uranium storage options selected in the Record of Decision. Included within this amount is $0.6 million to continue to analyze and study the long-term storage of other fissile materials.

DISPOSITION OPTIONS

The alternatives for the disposition of surplus plutonium and certain other surplus weapons-usable fissile materials are focussed on meeting the spent fuel standard. The spent fuel standard involves making the surplus fissile material as difficult to retrieve and use as the residual plutonium in spent nuclear fuel from commercial power reactors. Surplus weapons-usable highly enriched uranium (HEU) can be made non-weapons usable by blending it down with natural or other assays of uranium into low enriched uranium. If this material were to be used as a reactor fuel, it could also result in economic benefits and could help offset the costs associated with implementing this alternative. The FY 1996 efforts will result in completion of the technical, cost, and schedule analyses of candidate disposition options.

The overall funding request for disposition activities in FY 1996 is $21.7 million. Of this amount, $21.2 million is for operating expenses and $0.5 million is for capital equipment to support disposition research and development. The increased funds are required to complete the technical, economic, engineering, cost and schedule, and environmental studies and documents to support the Programmatic Environmental Impact Statement and Record of Decision and to continue research and development of immobilization technologies. Other activities being funded in FY 1996 include completing the development of reference nuclear fuel fabrication processes for nuclear reactor options and beginning research and development and engineering and design activities for disposition technologies selected in the ROD. Included within this amount is $5.5 million to fund continuation of technical and industrial support to enable the blending of highly enriched uranium and its conversion to peaceful use as reactor fuel, and $0.8 million to continue detailed systems planning for other surplus fissile materials disposition options.

TECHNICAL INTEGRATION, SUPPORT & ASSOCIATED TECHNOLOGIES

This work encompasses technical project coordination and oversight, technical analyses, modeling, systems engineering, support of the public outreach activities, agency/interagency coordination, and project control. A major portion of this work includes studies, analyses, research and development of technologies common to and supportive of all storage and disposition options, including plutonium stabilization, and pit disassembly and plutonium conversion. This effort also supports the decision criteria and analysis process and the systems analysis necessary to accomplish the evaluation of options and subsequent Record of Decision.

In FY 1996, $19.7 million in operating expenses is being requested for Technical Integration, Support & Integrated Technologies activities. Within this amount, $2.9 million is requested to complete all necessary systems analysis, decision analysis, records and documentation to support the Record of Decision scheduled for late summer of 1996; to continue tracking research and analyses to ensure that technical goals and milestones are being completed without redundancy, and to provide implementation support for post-ROD activities. In addition, $5.0 million is requested within this amount to continue the coordination, integration and oversight of technical implementation activities being performed by participating DOE laboratories, sites and contractors. This also includes selected conceptual design efforts and $11.8 million to complete studies, research, development, and testing on pit disassembly and plutonium conversion as well as engineering evaluation for crosscutting technical areas such as safeguards and security, transportation & containers, automation & robotics, and pit disassembly and plutonium conversion.

NEPA COMPLIANCE

We will complete an EIS on the disposition of surplus highly enriched uranium and a PEIS on long-term storage and disposition of other weapons-usable fissile materials and issue records of decision. The purpose of this NEPA evaluation is to support a Record of Decision on whether to upgrade existing storage facilities or to build new consolidated storage facilities for the long-term storage of weapons-usable fissile materials. The evaluation will also support a decision on the location of any new, consolidated storage facilities. Implementation of these long-term storage decisions will promptly follow the Record of Decision.

This NEPA evaluation will also support a Record of Decision on the technologies which will be used for the disposition of surplus weapons-usable fissile materials. A decision to commence implementation of surplus plutonium disposition will be made in a broad domestic and international context, involve other executive branch agencies, and will ultimately reside with the President. The Department's technical efforts and analyses and its Record of Decision will provide the essential foundation to afford the President the credible basis to enter into negotiations on bilateral or multilateral reductions in surplus weapons-usable fissile material inventories, or to implement disposition options unilaterally as an example to other nations.

The analyses and subsequent decisions will be based on the President's Nonproliferation and Export Control Policy of September 1993 and the January 1994 agreement between the United States and Russia on Nonproliferation of Weapons of Mass Destruction and the Means of Their Delivery. The analyses will take into account technical, nonproliferation, environmental, budgetary and economic considerations. The Records of Decision will be implemented in a manner that ensures that these fissile materials are subject to the highest standards of safety, security and international accountability.

The FY 1996 request of $9.0 million in operating expenses for NEPA Compliance will enable the Program to complete and issue the draft and final PEIS and issue the Record of Decision for storage and disposition of weapons-usable fissile materials; prepare and issue the environmental impact statement for the disposition of highly enriched uranium and prepare other NEPA analyses as appropriate.

PROGRAM MANAGEMENT

Program Management & Integration provides funds for the following activity groupings: 1) Program Direction (Federal salaries, benefits, and travel), 2) External Relations (public outreach and education activities), 3) Program Control & Administration (Program cost & schedule control, budget activities, and administrative support), 4) interface with the United States Enrichment Corporation (USEC) and industry for disposition of highly enriched uranium, and 5) Lead for Departmental support to the Interagency Working Group (IWG) and technical task lead for the joint plutonium disposition study with Russian technical experts.

Prior to Congressional action in FY 1995 to create a line-item organization to address fissile materials disposition, line organizations budgeted for FTE's, i.e., salaries and benefits, in their respective budget requests. Beginning in FY 1996, the budget request contains a total of $6.7 million in operating expenses for Program Management activities to support 30 program FTE's, continue public participation and outreach efforts to be able to disseminate program information and to carry on technical/administrative and analytical support services at the FY 1995 level.

PANTEX SAFETY STUDIES

The Plutonium Resource Center (PRC) in Amarillo, Texas will provide scientific and technical information on issues relating to the storage, disposition and potential utilization, and transportation of high explosives and other non-nuclear hazardous materials generated from weapons assembly and disassembly operations.

In FY 1996, a total of $10 million in operating expenses is being requested for the Plutonium Resource Center. Of this amount, $2.0 million will be used for safety studies described above and the balance of funds ($8.0 million) is integrated throughout the budget for activities related to fissile materials storage and disposition.

CONCLUSION

Nonproliferation and reducing the global nuclear danger are among the Administration's highest priorities. The nuclear danger today is in many ways more onerous and harder to manage than the nuclear danger that existed during the Cold War. Growing stockpiles of weapons-usable fissile materials and the economic and social challenges faced by the evolving democracies of the former States of the Soviet Union have greatly increased the risk of proliferation. The manner and effectiveness with which we deal with these concerns is clearly one of the key challenges of our time and the outcome will likely be the basis on which history judges our contributions to maintaining world peace and security.

The unique scientific and technical skills of the Department and its national laboratories are being brought to bear to deliver measurable results and a foundation for lasting progress in the safe, secure and environmentally sound long-term storage and disposition of weapons-usable fissile materials. The efforts of the Department's Fissile Materials Disposition Program and other nonproliferation programs will directly contribute to advancing U.S. and international nonproliferation interests and to improving the cost-effectiveness of the Department's management of stockpiles of surplus fissile materials.

Statement of
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Director, Office of Worker and Community Transition
U.S. Department of Energy
Before Energy and Water Subcommittee
Committee on Appropriations
United States House of Representatives
March 15, 1995

INTRODUCTION

Mr. Chairman, distinguished members of the Subcommittee, I appreciate this opportunity to discuss the activities of the Department's Office of Worker and Community Transition, and to support our Fiscal Year 1996 budget request of $100 million.

The Worker and Community Transition Program was established to support the President's commitment to assist in the transition of the employees and facilities of the Department's nuclear weapons production complex to the post-Cold War era, and to oversee implementation of section 3161 of the National Defense Authorization Act for Fiscal Year (FY) 1993. Initially these responsibilities were performed by a Secretarial Task Force, but as the scope of the task expanded, Secretary O'Leary determined that the functions needed the increased focus and stability of a formal organization. This decision resulted in the establishment of the Office of Worker and Community Transition in September of 1994.

The core mission of the Office of Worker and Community Transition is to provide policy guidance and oversight of the Department's efforts to mitigate the effects of work force reductions on the workers and communities near Departmental facilities. Planning for the Department's future work force needs, maintaining open communications with affected parties, and providing economic development support to local communities affected by reductions are crucial tasks in accomplishing this mission.

In section 3161 of the National Defense Authorization Act for FY 1993, the Congress contemplated the need for work force restructuring in response to the cessation of nuclear weapons production and the subsequent reduction in our Defense Programs budget. The

Department of Energy now faces the additional challenge of restructuring our contractor work force to achieve new missions, including cleaning-up the legacy of nuclear weapons production, more efficiently and cost-effectively. The Office of Worker and Community Transition intends to play a vital role in achieving the shared goal of the President and the Congress of reducing the Federal Government's cost of doing business. By working with those affected to achieve successful economic transitions, the Government can recognize cost savings while offering new opportunities to these workers and communities.

REQUIREMENTS AND OBJECTIVES OF SECTION 3161

Section 3161 provides the statutory mandate for the Department of Energy's work force restructuring activity. For this reason it is important to understand its objectives and requirements. Whenever there is a change in the work force at a defense nuclear facility, section 3161 requires that the Secretary of Energy: (1) develop a plan for restructuring the work force; (2) consult with the Secretary of Labor and appropriate representatives of local and national collective bargaining units of the affected employees, appropriate representatives of departments and agencies of State and local governments, appropriate representatives of State and local institutions of higher education, and appropriate representatives of community groups; (3) submit to Congress a work force restructuring plan for a defense nuclear facility within 90 days of the employees being notified of the work force changes; and (4) issue an annual update to a plan and submit the update to Congress.

In addition to these requirements, section 3161 requires the Secretary to take into account the following objectives when preparing work force restructuring plans: (1) accomplish the work force change so as to minimize social and economic impacts; (2) provide notice of work force changes to employees and communities at least 120 days before the commencement of changes; (3) accomplish the changes, when possible, through use of retraining, early retirement, attrition, and other options that minimize layoffs; (4) provide preference, to the extent practicable, in any future hiring by the Department of Energy to involuntarily separated employees; (5) retrain employees, to the extent practicable, for work in environmental restoration and waste management activities at such facilities or other facilities of the Department of Energy; (6) provide relocation assistance to employees who are transferred to other Department of Energy facilities as a result of the plan; (7) assist terminated employees in obtaining appropriate retraining, education, and reemployment assistance; and (8) provide local impact assistance to communities that are affected by the restructuring plan.

To assure that the requirements and objectives are met and to assure that the commitment of the President and the Secretary to assist displaced workers is honored, the Department has issued planning guidelines for work force restructuring activities. These guidelines were developed with extensive input from stakeholders, and are designed to assist Department personnel in preparing work force restructuring plans. They are currently being revised as a result of concerns raised by stakeholders. I would like to highlight some of the major provisions of those guidelines:

Management flexibility: Each site is provided flexibility in preparing its work force restructuring plan. Section 3161 directs the Department to consult with a broad range of stakeholders in preparing each work force restructuring plan. Actual plans necessarily vary in benefits offered based on this consultation, management objectives, work force demographics and other conditions at the sites. The Department has been questioned about this variance; however, our goal, and our statutory charge, is to prepare work force restructuring plans that best accommodate the workers, the communities and the Department's management objectives at each site. We believe that this flexibility must continue to assure that the Program remains responsive not only to the workers but also to the Department's management needs.

The job attachment test: We have developed a job attachment test to ensure that benefits contemplated by section 3161 are made available to former weapons production workers. Benefits are to be provided to employees who were employed at a defense nuclear facility on September 27, 1991 (the day that President Bush announced the first unilateral reductions of the Nation's nuclear weapons stockpile), and also were employed at the time of the 120-day work force restructuring notice that led to the employees separation. This test determines those employees eligible to receive the widest range of benefits; and, in some cases, significantly lower levels of benefits may be offered to displaced employees who do not meet this test.

Preference in hiring: The Department has decided to offer a preference in any future hiring to employees who meet the job attachment test, and are involuntarily separated. The preference continues until termination by action or inaction of the employee. Application of this preference has clearly been the most contentious issue we have had to deal with because of its potential conflict with traditional trade jurisdiction decisions. The Department encourages local, site-by-site negotiations to achieve accommodations of internal union work rules that may otherwise serve as obstacles to implementing this preference.

Application to other Department facilities: In the Secretary's early review of plans to implement section 3161, she determined that the objectives of section 3161 should be applied to any change in the work force of the Department, not just those at defense nuclear facilities. As a result, we are looking at all changes in the Department and encouraging each program to include consideration of the objectives contained in section 3161 in planning for work force restructuring.

WORK FORCE RESTRUCTURING ACCOMPLISHMENTS

To date, the Department has approved plans and actions that have resulted in over 11,000 contractor positions eliminated. Of the approximately 11,000 positions reduced, roughly 20 percent resulted from involuntary layoffs. The average cost of each position eliminated has been less than $27,000. This figure is consistent with the experience of the Department of Defense and of many private sector work force restructuring efforts. I have included, at the conclusion of my testimony, Table 1 that details work force restructuring plans approved through February 1995 at 11 major sites that account for the bulk of reductions made to this point. We estimate that the cost savings in salary to the Department from these reductions is roughly $600 million per year. From this perspective, a one-time cost of $300 million to provide reasonable transition assistance for the workers and the communities is a good investment for the taxpayers.

These results were accomplished through a 120-day work force restructuring planning process that includes consultation with stakeholders such as employees, elected officials, and union representatives. Public meetings are held in each affected community to allow Department representatives to answer questions and address concerns.

The result of this process has been work force restructuring plans that address the unique needs of our displaced employees by offering transition assistance in various forms. Plans may offer retirement incentives for eligible workers, allowing them to remain in communities where they contribute a great deal. Plans may provide the means to retrain workers to help the Department to achieve its future mission at some sites. They may specify an offer for tuition assistance to prepare displaced employees for new careers outside of the Department. These plans also offer medical benefit extensions for families at a graduated scale until other coverage is secured.

The key components of these plans, however, are an assessment of the Department's future work force needs, an evaluation of the existing skills, and clear-headed strategies for making the transition necessary to efficiently accomplish the Department's missions.

LOCAL ECONOMIC DEVELOPMENT

In addition to addressing the impacts of work force reductions on individual workers, our Program also seeks to lessen the impacts on local communities, many of which are economically tied to Department of Energy facilities. The Department has achieved several successes that demonstrate the benefits of investment in economic development in these communities.

Let me take a moment to discuss an example involving the Pinellas Plant in Florida. In November 1994, the Department began negotiations to sell the Pinellas Plant to the Pinellas County Industry Council. The negotiations culminated in an agreement in principle announced December 21, 1994. That agreement was reduced to a formal sales contract and lease on February 27, 1995 and the property was transferred on March 8, 1995. The sale provides benefits to the community, the remaining workers at the Plant and to the Department. We expect to avoid between $9 and $34 million in costs compared with disposing of the facility through the General Services Administration.

The Pinellas County Industry Council is a government agency chartered to promote economic development in the County. By conveying the property at this time, we have made it possible for the Industry Council to aggressively market it, improving the probability of attracting new tenants to the Plant. In addition, the Department's current contractor, Martin Marietta, was initially reluctant to pursue new business activities at the site, but has now started serious discussions with the Industry Council, and is prepared to invest corporate resources in the facility. The agreement reached between these two parties will not be dependent on Department of Energy commitments.

Because a portion of Martin Marietta's new business takes advantage of the defense technology, neutron generators, that they perfected at the site, the new business will provide job opportunities for a number of present workers at the Plant. Those jobs could result in continued employment, and save the Department money by avoiding contractually-required work force restructuring costs. We estimate that up to 400 of the current workers may be offered new opportunities, and as a result the Department may save as much as $19 million in work force restructuring costs.

The Department will also benefit by reducing its overhead to the minimum necessary as soon as possible. Under the agreement, the Pinellas County Industry Council will assume some of the maintenance of the Plant immediately, and will increase its responsibilities over time as we reduce our occupancy. We believe the Government will save a minimum of $9 million when comparing this sale to traditional property disposal through the General Services Administration. If the Industry Council is successful in attracting new tenants, and if Martin Marietta's new businesses are successful, those savings could climb to $34 million (including avoided costs of work force restructuring and unnecessary cleanup).

In summary, the sale of the Pinellas Plant has benefits for everyone. The Industry Council obtains the property at a time when they can best attract new business opportunities to the site. This gives the community the best chance to attract new jobs, offsetting the impact of the end of the Department's presence at the site. It also enhances the probability of defense conversion, by giving Martin Marietta the incentive to develop the commercial applications of the neutron generator technology that was developed at Pinellas. Finally, the Government saves money over traditional approaches to the disposal of Federal real property.

While the Pinellas sale is clearly our hallmark accomplishment to date, there have been other economic development successes. Seven commercial leases at the Mound facility in

Ohio have been signed creating new business opportunities for Mound employees; three more leases are in the works. At Rocky Flats in Colorado, the Department has initiated a demonstration project to determine if the existing work force can be reemployed to recycle waste into commercial products. Continued investment in opportunities arising from the end of nuclear weapons production can lead to novel solutions that are good for the affected workers and communities, and save the Government money in the long-run.

NEW CHALLENGES

The President and the Congress have issued a challenge to create a Federal Government that works more efficiently and costs less. The Department has committed to meeting this challenge by saving some $14.1 billion over the next five years. The Office of Worker and Community Transition has a major role to play in meeting this commitment. We are planning to reduce the contractor work force by approximately 19,000 positions by the end of FY 1996. Most of these reductions will come from our environmental programs, and are estimated to result in budget savings of approximately $4 to $5 billion over five years. We are also continuing the post-Cold War transition that section 3161 was written to address: the Department is closing nuclear weapons facilities at the Mound Plant in Ohio, the Pinellas Plant in Florida, and part of our Rocky Flats facility in Colorado. In addition, our readiness for nuclear weapons testing is being down-graded at the Nevada Test Site.

This massive downsizing is possible, prudent, and desirable for a number of reasons. First, we simply cannot afford the levels of employment we currently have. The overall federal budget is being reduced, the Department's budget is being reduced, and program budgets are being reduced. Second, we do not need that level of employment. Our contractor employment at many sites actually exceeds levels that existed at the height of weapons production. In fact, between 1988 and 1992, as environmental spending increased, layers of contractor employees were added on top of the existing defense production work force to perform the environmental clean-up mission. It has become increasingly apparent that the Department's environmental clean up programs have an excessive number of management and oversight layers compared to the number of people who are performing actual remediation work. Finally, we must reduce the work force to be more efficient and effective in doing our job. We believe we can achieve this reduction without affecting the scope of the clean-up program while ensuring that remediation tasks with the greatest risk are not adversely impacted.

Part of the strategy to become more efficient considers privatization of functions and activities traditionally performed by our on-site contractors. This strategy has raised questions from those concerned about the impact of this initiative on our in-house work force. The Department is in the process of developing specific guidance regarding our privatization initiatives. While the process of developing guidance is not complete, the cost-benefit assessment of privatization actions will take into account work force restructuring costs.

This planned reduction of 19,000 contractor jobs between 1995 and 1996 is roughly 14 percent of its overall management and operations contractor work force. At Richland, Washington, a reduction of 4,800 positions represents a quarter of the current work force in an isolated community. The Savannah River site at Aiken, South Carolina faces a cut of 4,200 employees, nearly 20 percent of its total. Rocky Flats, outside Denver, will decline by 2,400 positions, 36 percent of its total. Nevada and Idaho will also see a quarter of their workers separated. A detailed breakdown of employment history and anticipated reductions at major Departmental sites is provided in Tables 2 and 3.

Our goal in undertaking these reductions is to maintain a work force qualified to achieve program objectives. Each site is undertaking a comprehensive review of its future skill requirements to make certain this goal is met, and the Office of Worker and Community Transition will place special focus on this aspect of the restructuring process during the next year.

The Department is improving its work force planning by adopting a five phase process: First, the sites evaluate present and future mission requirements. Second, we project the work force skills mix necessary to achieve these missions. Third, workers with appropriate skills are maintained. Forth, employees who can be retrained to perform future missions are identified. Finally, workers whose skills are redundant or excess are identified, and a work force restructuring plan is developed to accommodate them. This process is designed to ensure that the remaining work force is more efficient and cost-effective.

We are also committed to mitigating the effects of work force reductions on affected workers and communities. Since most sites have already undergone work force reductions that included voluntary separation incentives, and because of the magnitude of the cuts that will be made by the end of FY 1996, we expect that a higher percentage of the employment reductions will be involuntary. In response, the Department will focus on providing effective outplacement assistance programs, including training and educational assistance, that utilize demonstrated best practices available to all separated employees.

PROGRAM FUNDING

The Department of Energy budget requests $100 million specifically for the Worker and Community Transition Program. This is a reduction of $15 million from the funding provided in FY 1995. It reflects our best assessment of what will be required for work force restructuring that is related to the cessation of nuclear weapons production mission, which is the specific focus of the guidance provided in section 3161.

In the case where work force restructuring results from efforts to increase operating efficiency, the affected program will provide funds for benefits associated with the work force transition. For Fiscal Years 1995 and 1996, these reductions will occur primarily in the Environmental Management Program, and up to $200 million has been identified in that Program's FY 1996 budget request for this purpose, an increase of $85 million over the $115 million identified for these purposes in FY 1995. Overall, counting funding from FY 1995 and 1996, about $500 million is available for mitigating the 19,000 reduction in contractor employment, or roughly $25,000 per separated employee. This funding is essential if we are to realize long-term savings in this area approaching $5 billion over the next five years. A breakout of recent budget levels is included in Table 4.

Because much of the cost of work force restructuring will be directly borne by the program -- necessitating a trade off between the generosity of incentives and the numbers of people that would have to be separated -- we expect that future work force plans implementing these reductions will be increasingly sensitive to cost implications. Many sites are also seeking to achieve necessary reductions as soon as possible in order to realize maximum savings in FY 1996, and so reduce the number of workers who would otherwise have to be separated to meet budget targets. The Office of Worker and Community Transition will have oversight responsibility, and coordinate final restructuring plan approvals regardless of funding source.

CONCLUSION

The Department remains committed to investing in the futures of the workers and communities who helped maintain our Nation's nuclear deterrent during the Cold War. When the costs of this Program are weighed against the resources that these workers and communities represent, it is, in the Department's view, a wise investment. The Office of Worker and Community Transition plays a vital role in achieving these goals. We are helping to shape successful transitions that can ensure future economic health for the families and communities affected by the end of the Cold War, and we are committed to helping restructure the Department's work force in a manner that improves efficiency and cost-effectiveness, while maintaining the safety of Departmental operations. Your support of the budget request for the Office of Worker and Community Transition is critical to achieving these goals.

TABLE 1

Worker and Community Transition Approved Work Force Restructuring Plans

Office of Worker and Community Transition

Through February 1995

SITE	FY 1993	FY 1994	FY 1995 and Subseq.	Total	Workers	Economic Development	Number of Jobs	Cost Per Job*
Kansas City #1	$6,466,521	$589,315	$376,192	$7,432,028	$7,432,028	$0	225	$33,031
Savannah River	$57,943,000	$6,504,000	$1,779,000	$66,226,000	$61,981,000	$4,245,000	2,600	$23,839
Nevada Test Site #1	$2,731,000	$0	$0	$2,731,000	$2,731,000	$0	300	$9,103
Oak Ridge	$15,654,000	$9,769,000	$3,103,000	$28,526,000	$17,244,000	$11,282,000	865	$19,935
Rocky Flats	$95,000	$33,202,558	$3,760,496	$37,058,054	$36,558,054	$500,000	1,600	$22,849
Fernald #1	$1,844,500	$3,505,450	$50,000	$5,399,950	$5,399,950	$0	350	$15,428
Idaho (PTI)	$0	$1,277,839	$0	$1,277,839	$1,277,839	$0	100	$12,778
Nevada Test Site #2	$0	$7,215,000	$0	$7,215,000	$7,215,000	$0	600	$12,025
Mound	$0	$12,900,000	$7,500,000	$20,400,000	$20,400,000	$0	600	$34,000
Ross Aviation	$0	$386,096	$138,764	$524,860	$524,860	$0	24	$21,869
Pinellas	$0	$12,793,026	$20,756,378	$33,549,404	$33,549,404	$0	475	$70,630
Kansas City #2	$0	$19,452,100	$9,096,850	$28,548,950	$28,548,950	$0	851	$33,548
Fernald #2	$0	$0	$8,243, 052	$8,243, 052	$8,243, 052	$0	400	$20,608
Hanford	$0	$0	$82,400,000	$82,400,000	$76,400,000	$6,000,000	2,500	$30,560
TOTAL**	**$84,734,021**	**$107,594,384**	**$137,203,732**	**$329,532,137**	**$307,505,137**	**$22,027,000**	**11,490**	**$26,762**

* Workers Column/Number of Jobs Column

** Does not include economic development proposals approved separately from Work Force Restructuring Plans

TABLE 2

DOE Management and Operations Contractor Employment by Selected Sites (End of Fiscal Year Head Count)

Office of Worker and Community Transition

SITE	Actual 1994	Estimated 1995	1994-1995 Change	Projected 1996	1995-1996 Change	Other Changes*	Total Change**
Richland	16,701	14,273	(2,428)	12,620	(1,653)	(693)	(4,774)
Idaho	7,524	6,274	(1,250)	5,550	(724)	0	(1,974)
LLNL	7,321	7,350	29	7,350	0	0	29
Nevada	5,468	4,153	(1,315)	4,146	(7)	0	(1,322)
SNL	8,458	8,704	246	8,856	152	(27)	371
LANL	7,024	7,020	(4)	6,654	(366)	(500)	(870)
WIPP	735	662	(73)	648	(14)	0	(87)
Rocky Flats	6,698	5,998	(700)	4,298	(1,700)	0	(2,400)
Kansas City	3,289	3,550	261	3,550	0	0	261
Pantex	3,230	3,322	92	3,315	(7)	0	85
Mound	1,337	1,119	(218)	1,016	(103)	0	(321)
Fernald	2,385	1,994	(391)	1,794	(200)	0	(591)
Savannah River	18,922	15,299	(3,623)	15,299	0	(577)	(4,200)
Oak Ridge	17,215	16,521	(694)	16,138	(383)	(958)	(2,035)
Pinellas	1,007	784	(223)	358	(426)	0	(649)
SUBTOTAL	**107,314**	**97,023**	**(10,291)**	**91,592**	**(5,431)**	**(2,755)**	**(18,477)**
Other Sites	28,878	28,728	(150)	28,728	0	(447)	(597)
GRAND TOTAL	**136,192**	**125,751**	**(10,441)**	**120,320**	**(5,431)**	**(3,202)**	**(19,074)**

* Projected reductions in subcontractor and temporary personnel between 1994 and 1996.

** Changes between 1994 and 1996 in M&O contractor employment plus anticipated reductions in subcontractors and temporary personnel

02-03-95 data

TABLE 3

DOE Management and Operations Contractor Employment by Selected Sites (End of Fiscal Year Head Count)

Office of Worker and Community Transition

SITE	1988	1989	1990	1991	1992	1993	1994
Richland	11,449	11,683	12,730	14,127	15,107	16,062	16,701
Idaho	5,773	6,510	7,548	7,988	7,901	7,810	7,524
LLNL	8,007	8,042	8,042	8,158	7,981	8,014	7,321
Nevada	8,035	7,996	7,713	7,390	6,670	5,548	5,468
SNL	8,372	8,432	8,705	8,804	8,473	8,477	8,458
LANL	7,442	7,667	7,402	6,992	7,203	7,293	7,024
WIPP	375	506	603	714	775	799	735
Rocky Flats	5,275	5,312	6,415	7,521	7,302	7,505	6,698
Kansas City	6,946	6,829	6,414	5,497	4,489	4,170	3,289
Pantex	2,627	2,573	2,390	2,492	2,673	3,020	3,230
Mound	2,219	2,150	2,149	2,150	1,741	1,713	1,337
Fernald	1,509	1,122	1,128	1,203	1,489	2,296	2,385
Savannah River	10,629	16,403	17,663	20,185	20,979	19,788	18,922
Oak Ridge	15,651	15,965	15,934	17,200	17,257	17,437	17,215
Pinellas	1,710	1,698	1,667	1,618	1,569	1,100	1,007
SUBTOTAL	**96,019**	**102,888**	**106,503**	**112,039**	**111,609**	**111,032**	**107,314**
Other Sites	31,012	29,277	34,086	33,574	37,077	30,436	28,878
GRAND TOTAL	**127,031**	**132,165**	**140,589**	**145,613**	**148,686**	**141,468**	**136,192**

02-03-95 data

TABLE 4

Budget

Office of Worker and Community Transition

($ in millions)

Funding Activities	**FY 1993**	**FY 1994**	**FY 1995**	**FY 1996**
Programs (stockpile support)	$85			
Weapons Program Direction		$100		
Worker & Community Transition Program		$100	$115	$100
Environmental Restoration & Waste Management Program			up to $115	up to $200
TOTAL	**$85**	**$200**	**$230**	**$300**

TESTIMONY OF

JOHN T. CONWAY, CHAIRMAN

A. J. EGGENBERGER, VICE CHAIRMAN

JOHN W. CRAWFORD, Jr., MEMBER

JOSEPH J. DiNUNNO, MEMBER

HERBERT KOUTS, MEMBER

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

FY 1996 APPROPRIATIONS HEARING

SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT

COMMITTEE ON APPROPRIATIONS

UNITED STATES HOUSE OF REPRESENTATIVES

MARCH 15, 1995

MR. CHAIRMAN AND MEMBERS OF THE SUBCOMMITTEE:.

We appreciate the opportunity to present the FY 1996 budget request for the Defense Nuclear Facilities Safety Board (Board).

The President's FY 1996 budget requested $18.5 million in new budget authority and 149 FTE staff years for the Board. At the same time, as part of the President's Reinventing Government Initiative, all Federal agencies are reexamining their mission. This includes: addressing the mission based on "customer" input; asking whether the mission could be accomplished as well as or better without Federal involvement; looking for ways to cut costs or improve performance through competition; and ways to put customers first, cut red tape, and empower employees. We are actively participating in this effort and will be keeping the Subcommittee fully apprised of this review.

STATUTORY MISSION OF THE BOARD

The Board's enabling statute, 42 U.S.C. § 2286, requires the Board to review and evaluate the content and implementation of health and safety standards, including DOE's Orders, rules, and other safety requirements, relating to the design, construction, operation, and decommissioning of DOE's defense nuclear facilities. The Board must then recommend to the Secretary of Energy any specific measures, such as changes in the content and implementation of those standards that the Board believes should be adopted to ensure that the public health and safety are adequately protected.

The Board's health and safety review and advisory responsibilities continue throughout the entire life-cycle of facilities under its jurisdiction, including the design, construction, testing, operation and decommissioning of these facilities. The Board is also required to investigate any event or practice at a DOE defense nuclear facility which it determines has adversely affected or may adversely affect public health and safety.

The Board has been in operation for 5 ½ years. During this period, the Board has made substantial progress in recruiting a highly-qualified staff and in implementing its health and safety oversight responsibilities at Department of Energy defense nuclear facilities, as originally prescribed in Public Law 100-456.

The Board has also undertaken the added responsibilities mandated by the National Defense Authorization Act for Fiscal Years 1992 and 1993 (Public Law 102-190) which amended the original law. These amendments, which added the assembly, disassembly, and testing of nuclear weapons to the scope of the Board's health and safety responsibilities, increased the Board's workload substantially.

FIFTH ANNUAL REPORT TO CONGRESS

The Board recently prepared and submitted an annual report to the Congress as required by its enabling legislation. This report presents a comprehensive review of the activities of the Board during calendar year 1994, including an assessment of the improvements in the safety of DOE defense nuclear facilities and an assessment of safety problems remaining at these facilities. In our testimony today, we will attempt to summarize the Board's progress in fulfilling its public health and safety mission, and highlight our planned review activities to be supported by this budget request.

As required by statute, the Board also addressed three special issues in its fifth annual report. These issues are:

- an assessment of the degree to which the overall administration of the Board's activities are believed to meet the objectives of Congress in establishing the Board;

- recommendations for continuation, termination, or modification of the Board's functions and programs, including recommendations for transition to some other independent oversight arrangement, if it is advisable; and

- recommendations for appropriate transition requirements in the event that modifications are recommended.

During the past year, the Board systematically studied its effectiveness relative to its assigned mission. As part of this study, the Board conducted eight public hearings at locations in the vicinity of principal defense nuclear facilities, and a hearing in Washington, D.C., where testimony was received from the Secretary of Energy and other high-level DOE managers. The Board's public hearing records document that the DOE, state and local governments, and the public believe the external oversight function entrusted to the Board has proved to be beneficial and merits continuance. The Secretary of Energy provided the following testimony at the Board's public hearing held on December 6, 1994:

> "I want to focus, first of all, on your key question, which might be whether the Board has assisted the Department of Energy in identifying significant nuclear safety problems and helped us in correcting those problems. My response would be a resounding yes."

As required by law, the Board deliberated on the adequacy of its current statutory authority in light of its oversight experience of the past five years, and whether that authority should be amended or eliminated entirely. In summary, the Board concluded that:

- independent, external oversight of DOE's nuclear safety management of the defense nuclear complex is a vital function worthy of continuance;
- the Board's existing statutory authority is sufficient to achieve Congressional objectives in establishing the Board; and
- the Board, through the current recommendation process rather than a formal regulatory procedure, provides a cost-effective means for achieving the added safety assurance that the Congress, the Administration, and the public seek.

PUBLIC HEALTH AND SAFETY CONCERNS

Changes in the nuclear defense complex have had, and will continue to have, a significant impact on the Board's health and safety oversight mission. Many of the safety issues arising from these extraordinary changes involve operations and processes that are new to the nuclear weapons industry; others have never been addressed at all. Simply put, the process of "shutting down" many defense nuclear facilities compounds existing hazards involving handling and storing nuclear materials with additional hazards associated with cleaning up the facilities. If safety systems are not properly maintained, and other precautions are not taken, these facilities can pose an increasing risk to public health and safety.

Many of the most difficult technical challenges and uncertainties result from the poor physical condition of facilities. As facilities age, maintenance becomes more difficult and more expensive. As key operating personnel leave, the knowledge of facility designs and contents erodes, reducing the margin of safety. The potential for detonation, fire, and corrosion hazards may increase as chemical compounds become unstable through time, changing their risk characteristics. Existing radiological hazards may become worse as certain radionuclides become more radioactive (for example, americium).

Clean-up operations are rarely as routine or predictable as production operations. During the process of dismantling facilities, workers are more likely to come in contact, often unexpectedly, with radioactive and chemical hazards that have been inaccessible for many years. Contaminants may be released to the immediate environment during the dismantling process. Shutting down and dismantling a defense nuclear facility can actually increase the risk of dispersal of radioactivity through material degradation, action of natural phenomena hazards, fires, or accidental nuclear criticality. Therefore, special attention and care are required during these processes.

At the same time, many previously identified threats to public health and safety throughout the complex remain to be resolved satisfactorily. These include, for example, uncertain characterization of the contents of, and leaks from, radioactive waste storage tanks; deteriorating nuclear reactor fuel in storage basins; potential safety problems of radioactive materials left in production lines; radioactive contamination of soil around former nuclear chemical processing facilities; unanticipated difficulties with weapons dismantlement; and deficiencies in training and qualification programs, in radiological protection, and in the conduct of operations.

Well recognized and long-standing problems, accompanied by new activities, present different and potentially serious hazards to public health and safety. It is wrong to conclude that the reduction of weapons production activities at DOE facilities means that safety oversight can be reduced. The reality is that there is a need to maintain independent technical oversight efforts, in order to ensure that both the workers and the public are adequately protected.

NUCLEAR WEAPONS HEALTH AND SAFETY ISSUES

In the weapons-related areas, the technical challenges facing DOE and the Board will change as DOE plans for the change in the complex. Major weapons-related issues requiring continuing attention include:

- safe dismantlement of approximately 2,000 nuclear weapons per year in accordance with improved, standards-based methods;

- the requirement to provide substantially increased capacity for the safe storage of weapons-grade plutonium, enriched uranium, and other nuclear materials removed from weapons; and

- the necessity for continuing detailed review of DOE's resizing of the weapons complex, and its use of the Stockpile Management and Stockpile Stewardship programs to ensure that nuclear safety is retained.

- significant losses of technical personnel experienced in operational safety-related issues, from a system that has been more "expert-based" than characterized by formal conduct of operations.

The continuing national commitment to dismantle approximately 2,000 nuclear weapons per year will significantly challenge the DOE weapons complex that is experiencing a coincident erosion of technical capability and limitation in physical plant capacity. For example, DOE has experienced several technical and safety-related difficulties in dismantling the W-48 weapon system; these have resulted in several significant delays while required safety-related and other technical changes have been incorporated in the disassembly procedures.

In particular, the loss of experienced weapons program personnel from DOE, from the national weapons laboratories, and from contractor organizations continues to limit and significantly slow DOE's ability to address both systemic and site-specific safety problems. Dismantlement continues to be a primary mission for DOE; problems with the conduct of dismantlement operations and with the definition and documentation of the safe operating envelope at the Pantex facilities continue to need attention. Nuclear testing is currently in hiatus at the Nevada Test Site; however, plans to use the Test Site to support Stockpile Stewardship initiatives have the potential to generate new avenues of required Board oversight.

As the weapons complex shrinks, existing research and development facilities may be called on to assume limited special missions. These facilities are just now beginning to incorporate greater formality in the manner in which they are operated while conducting research activities. As expertise within DOE continues to be reduced, at the same time that facilities are used differently than originally envisioned, the Board's review and evaluation will need to address any appropriate differences in safety management approach between production and research activities.

The aging of the Nation's nuclear weapons stockpile will also present unique challenges. Modifications may need to be made to extend the shelf life of today's weapons, and difficulties, as yet unforeseen, are likely to develop during the weapons surveillance process. Such occurrences could have significant safety and reliability consequences.

BUDGET OVERVIEW

The President's FY 1995 budget request for the Board recognized the importance of the Board's health and safety mission, and therefore authorized an increase in staff from 100 to 150 FTE's. As of March 1, 1995, the Board had 101 employees on board.[1] During FY 1995, the Board plans to continue its efforts to recruit qualified technical personnel to fulfill its obligations under the expanded requirements placed upon it.

The Board's FY 1996 budget request for $18.5 million differs from the FY 1995 budget appropriation for the Board of $17.9 million primarily due to the inclusion of funds to pay the full salary, benefits, and associated support costs for additional technical staff hired in FY 1995. To effectively execute its responsibilities, the Board is seeking to hire additional technical personnel with experience in nuclear-chemical processing, in general nuclear safety analysis, in conventional explosive technology and safety, in storage of nuclear materials and criticality safety, and in waste management and environmental restoration.

Since the limited staff size precludes our ability to cover all scientific matters by means of in-house specialists, the Board plans to continue contracting for specialized outside technical expertise on a limited basis. The use of selected outside subject matter experts to augment our permanent staff on an as needed basis has enabled the Board to optimize expenditures for personnel, and to achieve a high degree of flexibility in establishing highly qualified technical teams for our oversight activities.

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[1] Employee total does not include the 5 full-time Board Members appointed by the President and confirmed by the Senate.

The Board fully supports and has taken the initiative to implement the President's proposed reductions in total administrative expenses. The Board achieved an overall 3 percent reduction in administrative expenses for FY 1994, and the additional administrative cost reductions proposed by the President for FY 1995 and FY 1996 are reflected in this budget request.

RECOMMENDATIONS TO THE SECRETARY OF ENERGY

During the first 5 years of operation, the Board made 31 formal sets of Recommendations to the Secretary of Energy, totaling 139 specific Recommendations, in accordance with Section 312(5) of Public Law 100-456. The Secretary of Energy has responded to and accepted each of these Recommendations. Attachment I lists the status of all Board Recommendations and DOE's implementation of those Recommendations.

The Board's Recommendations result from: (1) site visits by the Board, staff, and outside technical experts; (2) review of documentation concerning particular problems at the site; (3) review of staff or Board contractor reports in appropriate cases; (4) briefings by DOE officials and DOE contractors; and (5) deliberation and technical review by the Board. In 1994 alone, 216 site visits were made to DOE's defense nuclear facilities by Board Members, staff, or contractor experts. These visits focused primarily on selected facilities at sites that both the Board and DOE consider to be most pressing in light of DOE's mission, primarily the Savannah River Site, the Pantex Plant, the Hanford Site, the Rocky Flats Plant, the Idaho National Engineering Laboratory, the Oak Ridge

Y-12 Complex, the Los Alamos National Laboratory, and the Nevada Test Site.

During FY 1995 and FY 1996, as required by law, the Board intends to monitor DOE's responses to and implementation of the above Recommendations. The Board plans to expand the scope of its health and safety reviews to include other activities at these and other DOE defense nuclear facilities, and to make further recommendations as appropriate. In assessing priorities, the Board considers problems brought to its attention by Members and staff of the Congress, the General Accounting Office, and the public. Should an imminent or severe threat to public health and safety be identified at a DOE defense nuclear facility, the Board would respond and adjust its priorities as necessary.

PUBLIC PARTICIPATION

The Board has held a total of 24 public meetings/briefings near selected DOE defense nuclear facilities, to listen to and discuss the status of ongoing health and safety reviews. At these meetings, the Board has invited interested persons or groups to present comments, technical information, or data involving specific Board Recommendations and the Secretary's response to these Recommendations.

The Board has also held 16 open meetings at its Washington, DC offices where, among other topics, the Board, its technical staff, and outside experts have discussed the status of ongoing work in the standards area, as well as ongoing health and safety reviews at DOE defense nuclear facilities. The Board anticipates scheduling additional public meetings/briefings during FY 1995 and beyond.

CURRENT HEALTH AND SAFETY REVIEWS

In keeping with its enabling legislation, Board activities during 1994 focused upon seven basic areas related to health and safety at defense nuclear facilities. These seven areas are: (1) the content and implementation of standards, including DOE Orders, regulations, and other safety requirements; (2) safety aspects of design and construction of defense nuclear facilities; (3) recruitment, retention, education, and training of DOE technical personnel; (4) safety aspects of conduct of operations; (5) safety aspects of the assembly, disassembly, and testing of nuclear weapons, (6) safe management of special nuclear material, waste, and residues; and (7) decontamination, decommissioning, and restoration of DOE sites.

COMPLEX-WIDE SAFETY ISSUES REQUIRING PRIORITY ATTENTION

Within the broad context we have outlined, the Board plans to continue its emphasis on a number of safety issues across the defense nuclear complex. These include the need for the Board to:

- Oversee the safe dismantlement and safe storage of nuclear weapons and weapons components;

- Oversee the development and application of nuclear safety-related standards; assess their adequacy; and confirm compliance;

- Continue to review DOE's effort to integrate safety requirements contained in rules, orders, and elsewhere into a clear, coherent, and consistent standards-based safety program.

- Closely monitor DOE's upgrading of technical capabilities and expertise to ensure safety;
- Draw attention to the need for DOE to provide prompt, long-term and safe processing, packaging and storage of plutonium;
- Instill continued improvement in the safe conduct of operations by DOE and its contractors including developing and implementing comprehensive safety standards;
- Continue to review DOE's program for resolving ongoing nuclear safety issues associated with corrosion and storage of spent fuel;
- Help to ensure that DOE pursues excellence in the radiation protection program to protect workers and the public from nuclear radiation;
- Oversee the safe handling and disposition of nuclear waste materials and the control of releases to the environment; and
- Oversee DOE's adoption of a systems approach to projects and programs to achieve cost effective nuclear safety.

SITE-SPECIFIC SAFETY ISSUES

The Board plans to place a high priority on the following site-specific safety issues in FY 1995 and FY 1996:

Fernald

- Safe stabilization of uranyl nitrate hexahydrate solutions.
- Implementation of the requirements of Recommendation 93-4 regarding technical management of this particular Environmental Management Restoration Contract.

Hanford Site

- Characterization of high level nuclear waste in tank farms, and integration of overall Tank Waste Remediation System efforts using accepted systems engineering principles, including effective implementation of Recommendations 90-7, 92-4, and 93-5.
- Clean up of corroding fuel in the K-East Basin, and removal of in-process hazardous material from Plutonium Finishing Plant systems.

Idaho National Engineering Laboratory

- Upgrading of Idaho Chemical Processing Plant fuel basins and associated safety bases.
- Disposition of remaining reprocessing solutions at the ICPP and review of safe storage of calcined waste.

- Safety of the Advanced Test Reactor (ATR).

Mound Site

- Unloading of tritium reservoirs, including readiness reviews, and the repackaging of uranium and plutonium materials in response to Recommendation 94-1.

National Weapon Laboratories

- Programs for ensuring safety of defense nuclear-related research and development activities.

- Revised safety analyses of facilities, with particular emphasis on analysis for seismic hazards at the Los Alamos National Laboratory and the Lawrence Livermore National Laboratory.

Nevada Test Site

- Establishment of a comprehensive process to prepare for and evaluate nuclear test readiness, including implementation of Recommendations 92-6 and 93-6.

- The design basis and the operational readiness of the new Device Assembly Facility.

Oak Ridge

- Conduct of operations and criticality safety at the Y-12 Plant, in response to Recommendation 94-4.

- Adequacy of nuclear material storage.

Pantex Plant

- Design and safety basis for the new Special Nuclear Material Staging facility.
- New and upgraded safety analyses to ensure technical adequacy.
- Revised requirements on overflights and analysis of safety of overflights.

Rocky Flats

- Processing and storage of various forms of special nuclear material (SNM) to meet the requirements of Recommendation 94-1.
- Implementation of Recommendation 94-3 for systematically evaluating the design of Building 371 for the storage of SNM.

Savannah River Site

- Start up and operation of F-Canyon, FB-Line, H-Canyon, HB-Line and spent fuel storage basins to stabilize various forms of SNM.
- Safety basis and readiness for start-up of the In-Tank Precipitation Facility and the Defense Waste Processing Facility.

SUMMARY

With the benefit of 5 full years of operating experience, the Board's FY 1995 budget obligation plan and FY 1996 budget request for $18.5 million have been developed to provide the necessary flexibility to fund and manage our independent oversight activities consistent with current resource needs and as we become aware of emerging safety issues during our reviews.

In summary, changes in the DOE nuclear weapons complex have made the Board's job more demanding, not easier. Consequently, the Board's health and safety oversight activities will continue to broaden in scope and complexity. The Board, having discerned that DOE and its contractors are having difficulty in adapting to changes in the safety culture and in transferring the "lessons learned" from both Board Recommendations and site reviews to other facilities and sites in the DOE nuclear complex, has intensified its efforts to verify that Board Recommendations are implemented as committed to by DOE. Our budget request of $18.5 million will provide the funding needed to support the Board's health and safety review effort planned for FY 1996.

Thank you for the opportunity to report to you on the Board's progress in meeting the challenges before us. We will be happy to answer any questions you may have.

DEFENSE NUCLEAR FACILITIES SAFETY BOARD
1994 RECOMMENDATIONS CALENDAR

3/7/95 Update

DNFSB Recommendation Number, DOE Site Involved And Subject In Brief	Date Delivered To Sec'y Of DOE	Date Recomme. Appears In Fed. Register	Public Comments To Rec. Deadline Date	Sec'y Of DOE Response Due Date	Date Sec'y Of DOE Response Received	Date Response Appears In Fed. Register	Deadline For Public Comments To SOE Response	Implementation Plan Due Date	Date Implementation Plan Received
94-1 All Sites Improved Sched. for Remediation	05/26/94	06/03/94	07/05/94	1/ 09/01/94	08/31/94	09/06/94	10/06/94	2/ 02/28/95	2/ 03/01/95
94-2 All Sites Low-Level Waste Disposal	09/08/94	09/15/94	10/17/94	10/31/94	11/08/94	11/16/94	12/16/94	3/ 03/31/95	
94-3 Rocky Flats Seismic and Safety Systems	09/26/94	10/04/94	11/03/94	11/18/94	11/21/94	11/28/94	12/28/94	4/ 04/12/95	
94-4 Oak Ridge Deficiencies in Criticality Saf.	09/27/94	10/05/94	11/04/94	11/21/94	11/18/94	11/28/94	12/28/94	02/27/95	02/27/95
94-5 All Sites Integ. of Safety Rules, Orders	12/29/94	01/06/95	02/06/95	02/21/95	02/23/95				

1/ Response originally due 7/18/94, SOE requested 45-day extension.

2/ Implementation Plan initially due 12/5/94, and was received 12/6/94; DOE/US withdrew original Plan 1/26/95, and stated it would be resubmitted by 2/28/95.

3/ Implementation Plan originally due 2/14/94, SOE notified Board that DOE needed an additional 45 days.

4/ Implementation Plan originally due 2/27/95, SOE notified Board that DOE needed an additional 45 days.

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DEFENSE NUCLEAR FACILITIES SAFETY BOARD
1993 RECOMMENDATIONS CALENDAR

3/7/95 Update

DNFSB Recommendation Number, DOE Site Involved And Subject In Brief	Date Delivered To Sec'y Of DOE	Date Recomme. Appears In Fed. Register	Public Comments To Rec. Deadline Date	Sec'y Of DOE Response Due Date	Date Sec'y Of DOE Response Received	Date Response Appears In Fed. Register	Deadline For Public Comments To SOE Response	Implementation Plan Due Date	Date Implementation Plan Received
93-1 All Sites, Standards Utilization	01/21/93	01/28/93	03/01/93	04/28/93[1]	04/27/93	05/10/93	06/09/93	08/09/93	08/25/93[2]
93-2 All Sites, Critical Experiment Capability	03/23/93	03/30/93	04/29/93	05/14/93	05/13/93	06/04/93	07/06/93	09/02/93	08/10/93
93-3 All Sites, Tech. Capability in DNF Programs	06/01/93	06/08/93	07/08/93	07/23/93	07/23/93	08/06/93	09/06/93	11/04/93	11/04/93[3]
93-4 All Sites, Env. Restoration Mgmt. Contracts	06/16/93	06/24/93	07/26/93	08/09/93	08/09/93	08/12/93	09/13/93	11/10/93	11/09/93[5]
93-5 Hanford, Waste Tanks Char. Studies	07/19/93	07/28/93	08/27/93	09/13/93	08/31/93	09/09/93	10/11/93	01/24/94[4]	01/25/94
93-6 All Sites, Maintaining Acc. to Nuc.Wea.Exp.	12/10/93	12/23/93	01/24/94	02/07/94	02/04/94	02/17/94	03/22/94	07/05/94[6]	07/08/94

[1] 45-day extension requested by DOE; Board approved 3/23/93.

[2] Original Implementation Plan received 7/19/93; received amended IP that includes requested Board additions on 8/25/93.

[3] Implementation Plan also covered revised IP for Recommendation 92-7.

[4] Implementation Plan originally due 12/8/93, 12/14/93 received letter (dated 12/9/93) notifying that DOE needed a 45-day extension.

[5] 5/16/94 DOE notified Board that Item 4 of Recommendation is closed.

[6] Implementation Plan originally due 5/18/94, 5/19/94 received letter from SOE notifying Board that DOE needed 45-day extension.

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DEFENSE NUCLEAR FACILITIES SAFETY BOARD
1992 RECOMMENDATIONS CALENDAR

3/7/95 Update

DNFSB Recommendation Number, DOE Site Involved And Subject In Brief	Date Deliver-ed To Sec'y Of DOE	Date Recomme. Appears In Fed. Register	Public Comments To Rec. Deadline Date	Sec'y Of DOE Response Due Date	Date Sec'y Of DOE Response Received	Date Response Appears In Fed. Register	Deadline For Public Comments To SOE Response	Imple-menta-tion Plan Due Date	Date Imple-menta-tion Plan Received
92-1 Savannah River, HB-Line Oper. Readiness	05/21/92	05/29/92	06/29/92	1/ 10/14/92	10/20/92	11/06/92	12/07/92	**CLOSED 10/27/92**	**SUPER-SEDED BY REC.92-3**
92-2 All Sites, DOE Facility Rep. Program	05/28/92	06/04/92	07/06/92	07/20/92	07/21/92	07/31/92	08/31/92	10/29/92	6/ 11/05/92
92-3 Savannah River, HB-Line Op. Read. Review	05/29/92	06/04/92	07/06/92	2/ 09/03/92	2/ 09/21/92	10/16/92	11/16/92	11/30/92	2/ 09/21/92 **CLOSED**
92-4 Hanford, Multi-Function Waste Tank Fac.	07/06/92	07/14/92	08/13/92	08/28/92	08/28/92	09/23/92	10/23/92	5/ 02/05/93	7/ 11/07/94
92-5 All Sites, Discipline of Operation	08/17/92	08/28/92	09/28/92	3/ 11/27/92	3/ 12/18/92	01/08/93	02/08/93	04/08/93	3/ 12/18/92
92-6 All Sites, Operational Readiness Review	08/26/92	09/02/92	10/02/92	10/19/92	10/20/92	11/06/92	12/07/92	02/04/93	8/ 04/04/94
92-7 All Sites, Training and Qualification	09/22/92	09/28/92	10/28/92	4/ 12/28/92	01/21/93	01/28/93	03/01/93	4/ 06/14/93	9/ 11/04/93

1/ 45-day extension requested, Board approved on 7/17/92; DOE response to be sent within 30 days of receipt of DNFSB HB-Line report, which was delivered 9/14/92.

2/ 45-day extension requested for response, Board approved 7/17/92; DOE response dated 9/15/92 and received 9/21/92, Implementation Plan was included; Recommendation closed per 2/94 Annual Report.

3/ 45-day extension requested for response, Board approved 10/23/92; DOE response and Implementation Plan received together.

4/ 45-day extension requested for response, Board approved 12/2/92; 4/28/92 received DOE notice of 45-day extension for submitting Implementation Plan.

5/ Received DOE notice of 45-day extension for submitting Implementation Plan

6/ 1/15/93 Board letter to SOE stating Implementation Plan be revised.

7/ Original Implementation Plan received 2/4/93; Due to deficiencies, DOE has submitted revisions on 3/18/94 and 11/7/94

8/ Original Implementation Plan received 1/19/93; Received revised IP 9/17/93; Received revised IP 4/4/94, dated 4/1/94.

9/ Original Implementation Plan received 6/14/93; Received revised IP 11/4/93 that also covered IP for Recommendation 93-3; Recommendation closed per 2/94 Annual Report.

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DEFENSE NUCLEAR FACILITIES SAFETY BOARD
1991 RECOMMENDATIONS CALENDAR

3/7/95 Update

DNFSB Recommendation Number, DOE Site Involved And Subject In Brief	Date Delivered To Sec'y Of DOE	Date Recomme. Appears In Fed. Register	Public Comments To Rec. Deadline Date	Sec'y Of DOE Response Due Date	Date Response Appears In Fed. Register	Deadline For Public Comments To SOE Response	Implementation Plan Due Date	Date Implementation Plan Is Received	Public Hearing Date
91-1 All Sites Safety Standards	03/08/91	03/13/91	04/12/91	[1] 05/13/91	05/17/91	06/17/91	08/15/91	08/16/91	**CLOSED 10/27/92**
91-2 Savannah River, Narrative For Closure Pkg.	03/27/91	04/03/91	05/03/91	[2] 05/20/91	05/28/91	06/27/91	08/26/91	08/07/91	**CLOSED 10/27/92**
91-3 WIPP Readiness Review	04/25/91	05/01/91	05/31/91	[3] 06/17/91	[3] 07/24/91	08/23/91	[3] 09/03/91	08/07/91	**CLOSED 05/01/92**
91-4 Rocky Flats Operational Readiness Review	09/30/91	10/08/91	11/07/91	[4] 11/22/91	12/10/91	01/09/92	02/20/92	11/08/91	01/16/92 **CLOSED 05/01/92**
91-5 Savannah River, Power Limits/K-Reactor	12/19/91	12/27/91	01/27/92	[5] 02/10/92	03/10/92	04/09/92	06/08/92	[5] 01/31/92	**CLOSED 02/94 ANN.RPT.**
91-6 All Sites Radiation Protection	12/19/91	12/27/91	01/27/92	[6] 02/10/92	03/10/92	04/09/92	06/08/92	[7] 06/23/93	

[1] Originally DOE response due 4/29/91; Deputy SOE requested an extension to 5/13/91, Board approved 4/29/91

[2] SOE response letter dated 5/14/91 and received 5/24/91.

[3] SOE response letter dated and received 6/5/91; Implementation Plan due date determined from date response was received.

[4] SOE response letter dated 11/6/91 and received 11/8/91.

[5] SOE response letter dated and received 1/31/92; response includes Implementation Plan.

[6] SOE response letter dated 2/7/92 and received 2/11/92.

[7] Per 8/5/92 letter to SOE, Implementation Plan not accepted; 1/15/93 DOE submitted revised Plan; 6/23/93 received Revision 2 Implementation Plan, dated 6/21/93; 7/2/93 letter to SOE stating Revision 2 IP was acceptable if implementation dates were revised; 5/10/94 received letter from SOE stating implementation dates were adjusted.

DEFENSE NUCLEAR FACILITIES SAFETY BOARD
1990 RECOMMENDATIONS CALENDAR

3/7/95 Update

DNFSB Recommendation Number, DOE Site Involved And Subject In Brief	Date Delivered To Sec'y Of DOE	Date Recomme. Appears In Fed. Register	Public Comments To Rec. Deadline Date	Sec'y Of DOE Response Due Date	Date Response Appears In Fed. Register	Deadline For Public Comments To SOE Response	Implementation Plan Due Date	Date Implementation Plan Is Received	Public Hearing Date
90-1 Savannah River, Reactor Operator Trng.	02/22/90	03/01/90	03/31/90	04/15/90	04/13/90	05/14/90	07/12/90	3/ 07/13/90	06/28/90 **CLOSED 10/27/92**
90-2 All Sites Standards	03/08/90	03/14/90	04/13/90	1/ 06/12/90	06/12/90	07/12/90	09/10/90	6/ 11/09/94	08/30/90
90-3 Hanford Future Tank Monitoring	03/27/90	03/30/90	04/30/90	05/14/90	05/23/90	06/22/90	2/ 08/13/90	08/13/90	**CLOSED 05/01/92**
90-4 Rocky Flats Operational Readiness Review	05/04/90	05/10/90	06/11/90	06/25/90	06/25/90	07/25/90	09/24/90	4/ 11/30/90	08/30/90
90-5 Rocky Flats Systematic Evaluation Program	05/18/90	05/24/90	06/25/90	07/09/90	06/20/90	07/20/90	09/18/90	7/ 05/04/94	08/30/90
90-6 Rocky Flats Plutonium In The Ducts	06/05/90	06/11/90	07/11/90	07/26/90	07/26/90	08/27/90	10/24/90	11/30/90	08/30/90
90-7 Hanford Modif. To Imple. Plan For 90-3	10/12/90	10/18/90	11/19/90	12/03/90	12/11/90	01/10/91	5/ 03/04/91	8/ 10/00/94	

1/ Secretary's response originally due 4/25/90; Board granted 45-day extension to 6/12/90.
2/ Implementation Plan due day figured from 5/14/90.
3/ Original Implementation Plan received 7/13/90; supplemental received 2/7/91 to rectify deficiencies.
4/ Original Implementation Plan received 11/30/90; modification received 2/15/91 to incorporate revisions and changes cited by Board.
5/ Implementation Plan due date figured from 12/3/90.
6/ Original Implementation Plan received 9/17/90; due to deficiencies, DOE has submitted revisions on 11/14/91, 6/15/92, 12/24/92, 7/20/93, and 11/9/94.
7/ 5/27/93 letter to SOE requesting revised IP; 6/25/93 SOE responded, will provide rev. by 10/15/93; rev. 1 IP received 10/15/93; 12/20/93 letter to SOE requesting IP be rev.; 5/4/94 received Rev. 2 IP.
8/ Original Implementation Plan received 3/7/91; Revision 1, dated 12/92, received 9/2/93; 5/10/94 received WHC-EP-0721 Program Plan as a replacement to IP; 12/2/94 received DOE/RL-94-110 as updated IP.

Attachment I
Page 5 of 5

John T. Conway, Chairman
A.J. Eggenberger, Vice Chairman
John W. Crawford, Jr.
Joseph J. DiNunno
Herbert John Cecil Kouts

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

625 Indiana Avenue, NW, Suite 700, Washington, D.C. 20004
(202) 208-6400

February 6, 1995

The Honorable John T. Myers
Chairman
Subcommittee on Energy and Water Development
Committee on Appropriations
U.S. House of Representatives
Washington, DC 20515

Dear Mr. Chairman:

Enclosed is the FY 1996 Budget Request for the Defense Nuclear Facilities Safety Board in the amount of $18,500,000 and 149 full-time equivalent staff years. This budget request reflects the multi-year budget planning guidance recently announced by the President. The Board's FY 1996 budget request for $18,500,000 differs from the FY 1995 appropriation for the Board of $17,933,000 primarily due to the inclusion of funds to pay the full salary, benefits, and associated support costs for additional technical staff authorized by the President in FY 1995.

The reduction of weapons production activities at DOE facilities does not mean that safety oversight can be reduced. On the contrary, there is a need to increase safety oversight. With the shut down of many DOE facilities, the conditions and hazards being faced by DOE are potentially more urgent and present a more serious safety problem than when the facilities were in operation. Often, the urgency and seriousness have been caused by poor past practices; in other cases, the problems are inherent to the planned activities and the nature of the material involved. To effectively execute its responsibilities, the Board plans to hire additional technical personnel with experience in nuclear-chemical processing, in general nuclear safety analysis, in conventional explosive technology and safety, in storage of nuclear materials and criticality safety, and in waste management and environmental restoration during FY 1995.

Many safety issues arising from the DOE's change in mission have never been addressed before; others involve operations and processes that are new to the nuclear weapons industry. For example:

- As a facility is deactivated and decommissioned, the workers are subjected to more hazardous conditions than during operation. The workers will come into closer contact with radioactive materials, enter portions of facilities that were not intended to be occupied and will face other unexpected conditions.

- The aging and degradation of equipment that is at the end of its design life will present increasing hazards as safety systems become unreliable and break down more frequently.

- In some instances, plutonium metal was stored in direct contact with plastic bags. As plutonium decays it emits radiation that can cause the plastic bags to become brittle and give off hydrogen gas. Hydrogen itself is explosive and can also interact with the plutonium to form a material that can spontaneously ignite when subjected to air. These conditions increase the hazards associated with handling and storage of this material.

- Highly radioactive spent fuel is corroding and is stored in basins that were not intended for long-term storage. The associated hazards will continue to increase until corrective actions are taken.

- Throughout the complex, acidic solutions of fissile materials are being stored in tanks, bottles and process lines. The longer these materials are stored, the greater the likelihood there could be an accident caused by chemical changes in the solutions, natural phenomena hazards, personnel error or deterioration of containers.

- Some materials being stored will decay naturally with time to a material that in turn, decays giving off higher energy radiation and is more hazardous to handle than the original material.

- The continuing national commitment to dismantle approximately 2,000 nuclear weapons per year will significantly challenge the DOE weapons complex that is experiencing a coincident erosion of technical capability and limitation in physical plant capacity. For example, DOE has experienced several technical and safety-related difficulties in dismantling the W-48 weapon system; these have resulted in several significant delays while required safety-related and other technical changes have been incorporated in the disassembly procedures.

- The aging of the Nation's nuclear weapons stockpile will also present unique challenges. Modifications may need to be made to extend the life of today's weapons, and difficulties, as yet unforeseen, are likely to develop during the weapons surveillance process. Such occurrences would have significant safety and reliability consequences.

If safety systems are not properly maintained, and other precautions taken, these facilities will pose an increasing risk to health and safety. The Board is statutorily required to ensure adequate protection of public health and safety during the entire life-cycle of DOE facilities under the Board's jurisdiction, including the decommissioning of these facilities. The challenges the Board faces in fulfilling its responsibilities, and the Board's plans to meet those challenges, are addressed in our budget request.

The Board fully supports and has taken the initiative to implement the President's proposed reductions in total administrative expenses. The Board achieved an overall 3 percent reduction in administrative expenses for FY 1994, and the additional administrative cost reductions proposed by the President for FY 1995 and FY 1996 are reflected in this budget request.

In summary, changes in the DOE nuclear weapons complex have made the Board's job more demanding, not easier. Consequently, the Board's health and safety oversight activities will continue to broaden in scope and complexity. The Board, having discerned that DOE and its contractors are having difficulty in accomplishing the safety culture changes and in transferring the "lessons learned" from both Board Recommendations and site reviews to other facilities and sites in the DOE nuclear complex, has intensified its efforts to verify that the Board's Recommendations are implemented as committed to by DOE. Our budget request of $18,500,000 will provide the funding needed to support the Board's health and safety review effort planned for FY 1996.

The Board welcomes the opportunity to meet and discuss the merits of our budget request with you.

Sincerely,

John T. Conway

John T. Conway
Chairman

Enclosure: FY 1996 Congressional
Budget Request

FY 1996 BUDGET REQUEST TO THE CONGRESS

Defense Nuclear Facilities Safety Board

February 1995

Defense Nuclear Facilities
Safety Board
FY 1996 Congressional Budget Request

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Defense Nuclear Facilities
Safety Board
FY 1996 Congressional Budget Request

PROPOSED APPROPRIATION LANGUAGE

Salaries and Expenses

For necessary expenses of the Defense Nuclear Facilities Safety Board in carrying out activities authorized by the Atomic Energy Act of 1954, as amended by Public Law 100-456, section 1441 [$17,933,000] *$18,500,000,* to remain available until expended.

Further, for these activities, $17,945,000, to become available for obligation on October 1, 1996, to remain available until expended. (Energy and Water Development Appropriations Act, 1995.)

Defense Nuclear Facilities
Safety Board
FY 1996 Congressional Budget Request

ANALYSIS OF RESOURCES

(Tabular dollars in thousands).

OPERATING EXPENSES

	FY 1994 (Actual)	FY 1995 (Estimated)	BUDGET REQUEST FOR FY 1996	BUDGET REQUEST FOR FY 1997
New Budget Authority	16,560	17,933	18,500	17,945
Obligations	16,069	18,830	19,329	17,989
Outlays	15,877	17,568	19,282	18,016

Authorization: National Defense Authorization Act, Fiscal Year 1989 (amended the Atomic Energy Act of 1954 (42 U.S.C. 2011 et seq.) by adding new Chapter 21 -- Defense Nuclear Facilities Safety Board.

Defense Nuclear Facilities
Safety Board
FY 1996 Congressional Budget Request

PERSONNEL SUMMARY

	FY 1994 ACTUAL	FY 1995 BUDGET PLAN	FY 1996 BUDGET REQUEST	FY 1997 BUDGET REQUEST
Statutory Personnel Ceiling: (FTE's) 1/	150	150	150	150
FTE Ceiling as reflected in the President's Budget Requests	100	150	149	146
FTE Usage 2/	96	118	130	130
Board Members & Permanent Employees at End Of Fiscal Year 1/	100	130	130	130

1/ National Defense Authorization Act for FY 1992 and FY 1993, P.L. 102-190, raised the Board's statutory employee ceiling from 100 to 150 full-time staff. This statutory employment ceiling does not include Board Members, who are excluded by the Board's enabling legislation from the 150 full-time employees authorized to be hired by the Board. See 42 U.S.C. § 2286(b) and 42 U.S.C. § 2286b(b) (as amended).

2/ Includes 5 full-time Board Members.

Defense Nuclear Facilities
Safety Board
FY 1996 Congressional Budget Request

SECTION I -- PROGRAM OVERVIEW

INTRODUCTION

In 1988, Congress created the Defense Nuclear Facilities Safety Board (Board) as an independent oversight organization within the Executive Branch. The Board's principal function is to provide advice and recommendations to the Secretary of Energy on public health and safety issues at the U.S. Department of Energy's (DOE's) defense nuclear facilities. The President nominated the initial five Members of the Board in the summer of 1989, and the Senate confirmed those nominations the following October.

Broadly, the Board reviews a wide range of safety-related activities throughout the life cycle of DOE's defense nuclear facilities. Based on its reviews, the Board makes recommendations to the Secretary of Energy that it considers necessary to protect public health and safety. The Board also assesses safety management and personnel effectiveness both within DOE and the various Operation and Management (O&M) contractor organizations. If the Board determines that an imminent or severe threat to public health or safety exists, it makes its recommendations directly to the President, as well as to the Secretaries of Energy and Defense.

The Board's enabling statute, 42 U.S.C. § 2286, requires the Board to review and evaluate the content and implementation of health and safety standards, including DOE's Orders, rules, and other safety requirements, relating to the design, construction, operation, and decommissioning of DOE's defense nuclear facilities. The Board must then recommend to the Secretary of Energy any specific measures, such as changes in the content and implementation of those standards, that the Board believes should be adopted to ensure that the public health and safety are adequately protected.

The Board is authorized to conduct investigations, issue subpoenas, hold public hearings, gather information, conduct studies, impose reporting requirements on DOE, and take other actions in furtherance of its review of health and safety issues at defense nuclear facilities. These ancillary functions support the Board's primary function to help DOE identify and correct health and safety problems at defense nuclear facilities. The legislation requires the Secretary of Energy and contractors at defense nuclear facilities to cooperate fully with the Board.

Since the start of operations in October 1989, several major changes in the defense nuclear complex have influenced the Board's health and safety oversight activities. These have included:

- the interruption of materials production efforts throughout the complex in 1989 due, in large part, to safety concerns;
- DOE's later efforts to resume nuclear operations at some of these sites;
- abandonment of restart efforts at many facilities, due primarily to arms control agreements reached in the early 1990's; and
- the determination that many of these facilities are surplus to DOE's future mission.

During this period of rapid change, the Board has pursued its independent oversight activities in a variety of ways. The Board has issued over 139 individual Recommendations to the Secretary of Energy concerning actions necessary to ensure adequate protection of public health and safety, and provided additional technical concerns and observations to DOE in staff trip reports. The Board has met with DOE officials and with members of the public on an ongoing basis, and has implemented several reporting requirements on DOE.

TRANSITIONS IN THE DOE DEFENSE NUCLEAR COMPLEX

An unprecedented change in mission continues to evolve in the DOE nuclear weapons complex, influenced most strongly by the massive upheavals in the global political scene over the past few years. Production of nuclear weapons has virtually ceased. DOE has sharply curtailed processing of nuclear materials. Disassembly of thousands of nuclear weapons is proceeding. Entire sites are being shut down and their facilities readied for decommissioning, resulting in the start of a mammoth clean-up effort.

Many of the safety issues arising from these extraordinary changes involve operations and processes that are new to the nuclear weapons industry; others have never been addressed at all. At the same time, many previously identified threats to public health and safety throughout the complex remain to be resolved satisfactorily. These include, for example, uncertain characterization of the contents of, and leaks from, radioactive waste storage tanks; deteriorating nuclear reactor fuel cladding in storage basins; extensive radioactive contamination of soil around former nuclear chemical processing facilities; unanticipated difficulties with weapons dismantlement; and deficiencies in training and qualification programs, in radiological protection, and in the conduct of operations.

DOE and its major contractors continue to face severe problems in recruiting and retaining well-qualified personnel, despite efforts to improve the situation. Some of the best-qualified scientists, engineers, and technicians in the weapons complex have left or are leaving the program. Recent DOE initiatives to respond to the Board's Recommendations in this critical area are only now beginning to mature sufficiently to provide limited relief.

Well recognized and long-standing problems, accompanied by new activities, present different and potentially serious hazards to public health and safety. For example, aging and deteriorating equipment poses increasingly urgent safety concerns, particularly at facilities that may be required to operate in the future. Corrosion of spent nuclear fuel stored in basins that were not designed for long-term use is becoming a major problem. Chemical and radioactive wastes continue to accumulate at an accelerating pace. These wastes may become more difficult to handle and more hazardous in the future. The Board is concerned that these new hazards may be larger in number and greater in severity than those encountered in five decades of production operations.

In these circumstances, there is a pressing need to maintain independent technical oversight efforts, in order to ensure that both the workers and the public are adequately protected.

PLANNED FOCUS OF BOARD ACTIVITIES IN FY 1996

It is tempting to conclude that the reduction of weapons production activities at DOE facilities means that safety oversight also can be reduced. The reality is that there is a need to increase that scrutiny.

Simply put, the process of "shutting down" many defense nuclear facilities compounds existing hazards involving handling and storing nuclear materials with new hazards of cleaning up the facilities. If safety systems are not properly maintained, and other precautions are not taken, these facilities can pose an increasing risk to public health and safety.

The Board is required by its enabling statute to oversee DOE's efforts to ensure adequate protection of public health and safety during the entire life-cycle of facilities under its jurisdiction, including the decommissioning of these facilities.

In the weapons-related areas, the technical challenges facing DOE and the Board will change as DOE plans for the change in the complex. Major weapons-related issues requiring continuing attention include:

- the need to disassemble safely more than 2,000 nuclear weapons each year;
- the requirement to design and construct storage facilities for nuclear weapons to accommodate both safety concerns and possible independent international verification, as well as to provide increased capacity for the safe storage of weapons-grade plutonium, enriched uranium, and other nuclear materials removed from weapons; and
- the need for DOE to plan and conduct the reconfiguration of the weapons complex according to accepted health and safety principles.

Many of the most difficult technical challenges and uncertainties result from the poor physical condition of facilities. As facilities age, operators tend to pay less attention to maintenance and upkeep. When this happens, the facilities' condition inevitably degrades. As key operating personnel leave, the knowledge of facility designs and contents erodes, reducing the margin of safety. The potential for detonation, fire, and corrosion hazards may increase as chemical compounds become unstable through time, changing their risk characteristics. Existing radiological hazards may become worse as certain radionuclides (for example, americium) "grow" into nuclear materials due to radioactive decay, and as unknown or uncharacterized radioactive contamination is discovered in the decommissioning process.

Clean-up operations are rarely as routine or predictable as production operations. During the process of dismantling facilities, workers are likely to come in contact, often unexpectedly, with radioactive and chemical hazards that have been inaccessible for many years. Contaminants may be released to the environment by the dismantling process or by exposure to the weather. Shutting down and dismantling a defense nuclear facility can actually increase the risk of dispersal of radioactivity through material degradation, action of natural phenomena hazards, fires, or accidental nuclear criticality. Therefore, special attention and care are required during these processes.

Within the broad context depicted above, the Board plans to place high priority focus in FY 1996 on several complex-wide safety issues. These include the need to:

- Oversee the safe dismantlement and storage of weapons and weapons components;
- Closely monitor DOE's upgrading of technical capabilities and expertise;
- Ensure that DOE provides prompt, long term and safe processing, packaging and storage of plutonium-bearing materials;
- Instill continued improvement in conduct of operations by DOE and its contractors;
- Actively pursue DOE's program for resolving ongoing safety issues associated with corrosion and storage of spent fuel;
- Ensure that DOE pursues excellence in the radiation protection program; and
- Oversee the safe handling and disposition of waste materials and the control of releases to the environment.
- Continue to urge development and implementation of safety-related standards; assess their adequacy; and confirm compliance;
- Insist on DOE's adoption of a systems approach in projects and programs;

SECTION II -- FY 1996 BUDGET REQUEST

RESOURCES NEEDS

For FY 1996, the Defense Nuclear Facilities Safety Board requests $18,500,000 in new budget authority, and 149 full-time equivalent (FTE) staff years. This budget request reflects the multi-year budget planning guidance recently announced by the President.

The unsettled technical environment in which the nuclear weapons complex exists necessitates continued technical vigilance, if the Board is to fulfill its statutory requirements. Although it can now draw on expertise in many engineering and scientific disciplines, the Board plans to expand its capabilities in such specific areas as weapons safety, environmental engineering, chemical processing, and waste vitrification during FY 1995.

The President's FY 1995 budget request for the Board recognized the importance of the Board's health and safety mission, and therefore authorized an increase in staff from 100 to 150 FTE's. As of January 31, 1994, the Board had 100 employees on board.1/ During FY 1995, the Board plans to continue its efforts to recruit qualified technical personnel to fulfill its obligations under the expanded requirements placed upon it.

The Board's FY 1996 budget request for $18,500,000 differs from the FY 1995 budget appropriation for the Board of $17,933,000 primarily due to the inclusion of funds to pay the full salary, benefits, and associated support costs for additional technical staff hired in FY 1995. To effectively execute its responsibilities, the Board is seeking to hire additional technical personnel with experience in nuclear-chemical processing, in general nuclear safety analysis, in conventional explosive technology and safety, in storage of nuclear materials and criticality safety, and in waste management and environmental restoration. Since the limited staff size precludes our ability to cover all scientific matters by means of in-house specialists, the Board plans to continue contracting for specialized outside technical expertise on a limited basis.

1/ Employee total does not include the 5 full-time Board Members appointed by the President and confirmed by the Senate.

The Board fully supports and has taken the initiative to implement the President's proposed reductions in total administrative expenses. The Board achieved an overall 3 percent reduction in administrative expenses for FY 1994 , and the additional administrative cost reductions proposed by the President for FY 1995 and FY 1996 are reflected in this budget request.

In summary, changes in the DOE nuclear weapons complex have made the Board's job more difficult, and the Board's health and safety oversight activities will continue to broaden in scope and complexity. The Board, having discerned that DOE and its contractors are having difficulty in accomplishing the safety culture changes and in transferring the "lessons learned" from both Board Recommendations and site reviews to other facilities and sites in the DOE nuclear complex, has intensified its efforts to verify that the Board's Recommendations are implemented as committed to by DOE. Our budget request of $18,500,000 will provide the funding needed to support the Board's health and safety review effort required for FY 1996.

OBJECT CLASS SUMMARY

Our FY 1995 and FY 1996 expenditure plans, presented by object class accounts in Exhibits A and B, include our request for new FY 1996 budget authority of $18,500,000, and $17,933,000 in new FY 1995 budget authority approved in the Energy and Water Development Appropriations Act, 1995. The Board proposes to utilize the budget resources requested in the following manner:

Salaries and Benefits -- The FY 1996 expenditure request includes funding of $12,480,000 to support the salary and benefit costs of up to 130 full-time staff. The Board estimates that approximately 26 technical staff FTE's will be dedicated to the health and safety reviews in the weapons area in FY 1995, with a planned increase to 30 technical staff FTE's in FY 1996.

The funding for salaries and benefits represents 67 percent of the Board's FY 1996 budget request. In calculating the projected salary needs of the Board, the following pay increase factors were used:

For FY 1995 -- Actual

- A Federal pay increase of 2.0 percent beginning in January 1995;
- A locality pay increase of 0.6 percent beginning in January 1995;

For FY 1996 -- Assumptions

- A Federal pay increase of 2.2 percent is authorized beginning in January 1996;

The highly technical mission of the Board requires staff of the highest scientific and technical caliber with demonstrated competencies in all major phases of nuclear safety. Consequently, the average salary for the Board's technical staff is estimated to be $82,000 per year in FY 1996. Employee benefits are estimated at 24 percent of base salaries or $19,200 per FTE due to the large number of Board employees fully participating in the FERS retirement program.

Utilizing our "excepted service" hiring authority for scientific and technical personnel, the Board has made substantial progress in recruiting senior technical specialists, and is projecting salary and benefit requirements for 118 FTE's in FY 1995, and 130 FTE's in FY 1996. The Board's FY 1996 budget

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

FY 1996 CONGRESSIONAL BUDGET REQUEST
(Data as of 02/01/95)

BUDGET ACCOUNT	FY 1994 OBLIGATIONS (ACTUAL)	FY 1995 FINANCIAL PLAN	FY 1996 BUDGET REQUEST	FY 1997 BUDGET REQUEST
PERSONNEL SALARIES -- (11)	$7,168,923	$9,528,000	$9,980,000	$9,980,000
PERSONNEL BENEFITS -- (12)	$1,716,062	$2,375,000	$2,500,000	$2,500,000
TRAVEL -- (21)	$638,035	$825,000	$825,000	$825,000
TRANSPORTATION OF THINGS -- (22)	$100,980	$255,000	$155,000	$155,000
RENTAL PAYMENTS TO GSA -- (23.1)	$1,599,702	$1,600,000	$1,840,000	$1,700,000
COMMUNICATIONS & UTILITIES -- (23.3)	$115,637	$122,000	$122,000	$122,000
PRINTING & REPRODUCTION -- (24)	$27,641	$30,000	$27,000	$27,000
CONSULTING SERVICES -- (25.1) *	$3,535,699	$2,800,000	$2,600,000	$1,500,000
OTHER SERVICES -- (25.2)	$570,927	$650,000	$650,000	$550,000
GOVERNMENT SERVICES -- (25.3)	$103,158	$85,000	$90,000	$90,000
SUPPLIES & MATERIALS -- (26)	$263,148	$305,000	$310,000	$310,000
EQUIPMENT -- (31)	$229,450	$255,000	$230,000	$230,000
*** TOTAL OBLIGATIONS ***	$16,069,362	$18,830,000	$19,329,000	$17,989,000
NEW BUDGET AUTHORITY	$16,560,000	$17,933,000	$18,500,000	$17,945,000
UNOBLIGATED BALANCE - PREV. FY	$914,857	$1,841,838	$944,838	$115,838
RECOVERY OF PRIOR YR OBLIGATIONS	$436,343	$0	$0	$0
TOTAL BUDGETARY RESOURCES	$17,911,200	$19,774,838	$19,444,838	$18,060,838
EST. UNOBLIGATED BAL. - CUR. FY	$1,841,838	$944,838	$115,838	$71,838
APPROPRIATION	$16,560,000 (Actual)	$17,933,000 (Actual)	$18,500,000 (Requested)	$17,945,000 (Requested)
OUTLAYS	$15,876,505	$17,568,000	$19,282,000	$18,016,000

Exhibit A

FY 1996 BUDGET REQUEST
BY OBJECT CLASS

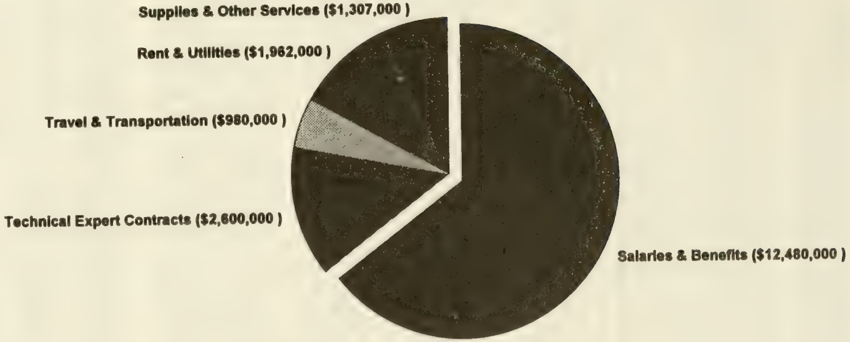

Exhibit B

request reflects a $577,000 or 5 percent increase in the salary and benefits account over FY 1995 to fully fund the hiring of additional technical staff during FY 1995.

The identification and hiring of professional personnel with outstanding qualifications are critical to the successful accomplishment of the Board's mission. It is of paramount importance that the Board receive sufficient funds to meet the salary and benefit requirements of existing and future technical personnel.

Travel -- The Board requests $825,000 to support the official travel of the Board Members and staff. Extensive travel is necessary to the various Department of Energy defense nuclear facilities located throughout the United States in order for the Board Members and staff to fulfill the Board's statutory mission. The Board is also required to react to incidents at the DOE defense nuclear facilities that may affect public health and safety, requiring unplanned travel expenditures to support our work at these sites.

The Board's duties and workload were greatly increased by a new law assigning it safety oversight responsibility for the assembly and disassembly of nuclear weapons. During 1994, Board Members, technical staff and the Board's outside technical experts made 216 visits to major defense nuclear sites in support of its public health and safety mission. With its increased health and safety oversight responsibilities over the assembly and disassembly of nuclear weapons, the Board's travel expenses have and will continue to increase as the Board and its technical staff fulfill the statutory mission of ensuring that public and worker health and safety are adequately protected throughout DOE's defense nuclear complex.

The Board is also authorized to station staff members at these sites during critical construction and testing periods. The Board has assigned technical staff teams to round-the-clock monitoring of major start-up, testing or restart activities at various DOE sites. The presence of technical staff has proved to be invaluable in providing the Board with first hand information on the problems DOE and its contractors encountered during such activities.

Travel funds are also used to support the Board's conduct of public hearings and meetings, where any interested persons or groups are invited to present comments, technical information, or data concerning health and safety issues at each facility. During 1994, the Board conducted 8 meetings/hearings at or near a DOE defense nuclear facility.

Transportation of Things -- The Board has included $155,000 in its FY 1996 budget request for the shipment of household goods for new employees relocating to the Washington, DC area or to DOE sites.

Rental Payments to GSA -- The Board requests funds totaling $1,840,000 to reimburse the General Services Administration (GSA) for projected office rental costs. The Board's current lease on its Washington, DC office space expires in FY 1995. Working with GSA leasing officials, the Board is soliciting bids on suitable space to accommodate its office needs. The FY 1996 budget request includes additional funds to pay for any moving and set-up expenses that GSA may incur should the Board be required to relocate. This overhead expense represents approximately 10 percent of our FY 1996 budget request.

Communications and Utilities -- The FY 1996 budget request includes $122,000 for projected communications support costs. Funds in this account will be used for telephone services, postage costs, special messenger services, and equipment rentals.

Printing and Reproduction -- Our budget request includes $27,000 for reimbursing the U.S. Government Printing Office for publication of the required legal notices in the Federal Register. Routine printing and copying charges, including the Board's Annual Report to the Congress, are also included in this account.

Consulting Services -- The Board has a broad mandate to carry out oversight functions to help assure public health and safety. If the Board is to be successful in carrying out those responsibilities, it must have the capability to technically evaluate total systems and the potential risks to worker safety and public health and safety. While the Board intends to continue recruiting and maintaining a highly capable staff, it is not practical or desirable to have permanent staff skilled in every specialty for which needs occur. For example, the evaluation of safety at the Hanford tanks requires, among other factors, a knowledge and understanding of the explosive potential of the particular materials in those tanks. However, such skills are not needed on a repetitive basis by the Board.

The Board plans to continue to obtain outside technical experts in highly specialized areas. Expertise on the assembly and disassembly of certain weapon components may be needed on short notice.

Within the defense nuclear complex, the health and safety significance of aged facilities that were never designed to modern structural engineering standards has been, and continues to be, a major focus of the Board. The Board has been compelled to draw upon outside experts to supplement in-house capabilities in this very specialized area. Another example is in the area of standards assessment and training where the effort required is of such magnitude that the majority of the permanent staff would be required just to meet the Board's Congressionally mandated responsibilities in that one area. It is recognized, however, that the use of outside experts depends for its effectiveness on direction and guidance by Board staff with strong technical and managerial credentials. Thus, our outside technical experts bring specialized knowledge, and are used to complement internal staff capabilities.

Such expertise may be required for short periods with little advance notice should an imminent or severe threat to public health and safety be identified at a DOE defense nuclear facility. Therefore, it is extremely important to have the funds necessary to immediately contract for this expertise when needed. Each outside technical expert that the Board employs will continue to be carefully screened for conflict of interest.

During FY 1994, the Board obligated $3.5 million for technical support contracts with selected individuals or firms that possess special expertise in selected areas. A list of major technical support contracts, with a brief description of each contractor's areas of expertise, is included in Appendix B. The FY 1996 budget request includes $2.6 million in this account for technical support contracts to assist the Board in its health and safety reviews. When compared with FY 1994 expenditures for outside technical experts, our FY 1996 funding request for technical support contracts represents a 26 percent decrease in this account. The Board plans to use $1 million of the requested contract funds for outside technical experts in reviewing health and safety issues at DOE weapons sites.

Other Services -- Our budget request includes $740,000 to fund the recurring administrative support needs of the Board in FY 1996 such as security services, court reporting expenses, employee training (e.g. mandatory EEO, AIDS, and ethics training), recruitment advertising, records storage and retrieval services, Internet bulletin board services, and the cost of reimbursable support agreements with other Federal agencies for administrative services such as accounting, payroll, health unit, and drug-free workplace testing and support.

Supplies and Materials -- The Board requests $310,000 for the purchase and/or updating the technical reference information for our in-house library, as well as for continued access to various technical computer databases, and for general office supplies and materials.

Equipment -- The FY 1996 budget request includes $230,000 to upgrade the existing capacity of our electronic records storage and retrieval system and our computer network. The Board has compiled extensive technical files that are open to public review at the Board's offices in Washington, D.C. Using the above computer based indexing and retrieval system, the Board's staff, DOE staff and its contractors, and the public can access electronically over 1 million pages of technical information covering current public health and safety issues associated with the DOE defense nuclear complex. Also, the Board plans to purchase additional computer work stations to replace hardware that has become obsolete with the rapid advance of new computer technology.

SECTION III -- TECHNICAL PROGRAM ACTIVITIES

When Congress broadened the Board's jurisdiction over defense nuclear facilities to include the assembly, disassembly and testing of weapons and weapons components, the Board expanded its technical review plans and associated resource commitments. Appendices D and E set forth summaries of the Board's actual and planned usage of its technical staff and outside technical resources by major site and by major technical review area.

The Board sets priorities for its oversight activities at specific sites on the basis of: (1) potential risk to public health and safety; (2) effectiveness of DOE management in managing those risks; (3) timeliness in relation to DOE programmatic or operational goals and objectives; and (4) urgency of any imminent or severe threat to public health and safety. If the Board were to learn of an imminent or severe threat to public health and safety at a DOE facility, it would respond and adjust priorities as necessary. In assessing priorities, the Board also considers problems brought to its attention by various sources, including Members and staff of the Congress, the General Accounting Office and the public.

RECOMMENDATIONS TO THE SECRETARY OF ENERGY

Since starting operations in October 1989, the Board has made 31 formal sets of Recommendations to the Secretary of Energy, totaling 139 specific Recommendations. Appendix C lists the Board's Recommendations, with key procedural events. The Secretary of Energy has responded to and accepted the first 30 sets of these Recommendations.

The Board's Recommendations emphasize those factors that are important to the safe and efficient operation of defense nuclear facilities. Among those activities receiving priority to date are:

- The identification, assessment, and application of standards;
- The selection, training, and qualification of operations, maintenance, and technical support personnel;
- The development of systematic approaches to evaluating and upgrading existing facilities;

- The need for adequate independent readiness reviews;
- The development of a comprehensive radiation protection program including the control of radioactive sources and contamination;
- The selection, training, and assignment of DOE Facility Representatives at defense nuclear facilities;
- The use of a systems approach for conducting projects;
- The need for expeditious resolution of pressing issues surrounding the stabilization and safe storage of fissionable materials and production residues; and
- Other substantive actions to improve safety.

The Board's enabling legislation prescribes the process by which the Board makes formal Recommendations to the Secretary, including the step-by-step procedure to ensure that the Secretary's responses and the Board's actions are made available to the public in a timely fashion. In general, that process has worked smoothly and without significant difficulty. The Secretary has accepted the Board's Recommendations within the specified periods, or has formally requested extensions which the Board has found justified. For some of the Recommendations, however, development of acceptable Implementation Plans has been slow. To address this shortcoming, the Board has begun the practice of appointing DNFSB staff task forces to work with cognizant DOE staff members in the preparation of Implementation Plans. DOE's responsiveness in this regard is improving.

Based on the Board's experience to date, the Board expects that most of its formal Recommendations in the future will emphasize broad safety-related subjects applicable to defense nuclear facilities at two or more sites or to several DOE organizational elements. However, it is also possible that, on occasion, unique conditions identified at specific facilities or sites as a result of Board reviews will dictate more narrowly focused Recommendations.

The Board also expects to continue to provide its observations, and those of its staff, to DOE by sending copies of selected staff trip reports and to request specific actions or reports in letters to the Secretary and other senior Department managers. Copies of such correspondence will be placed in our public reading room.

PUBLIC PARTICIPATION

From the start of operations in October of 1989, the Board has been sensitive to the need for public involvement and awareness of defense nuclear safety issues. The Board has met with Federal, state and local officials, labor leaders, DOE facility workers, public interest groups, and area residents in order to exchange information and to inform interested parties of the Board's work. In addition, the Board has held a total of 23 public meetings/briefings near the following DOE sites:

- Savannah River Site -- 6 meetings/briefings
- Rocky Flats Plant -- 6 meetings/briefings
- Hanford Site -- 2 meetings/briefings
- Pantex Plant -- 2 meetings/briefings
- Idaho National Engineering Laboratory -- 2 meetings/briefings
- Sandia/Los Alamos National Laboratory -- 2 meetings/briefings
- Oak Ridge National Laboratory -- 2 meetings/briefings
- Fernald/Mound Plants -- 1 meeting/briefing

At these meetings, the Board has invited interested persons or groups to present comments, technical information, or data involving specific Board Recommendations and the Secretary's response to these Recommendations.

The Board has also held 16 open meetings at its Washington, DC offices where, among other topics, the Board, its technical staff, and outside experts have discussed the status of ongoing work in the standards area, as well as ongoing health and safety reviews at DOE defense nuclear facilities. The Board anticipates scheduling additional public meetings/briefings during FY 1995 and beyond.

Notices of Board briefings/meetings are mailed to organizations and individuals who have requested to be on our mailing list, and are also published in the Federal Register. In addition, each notice is published three times in several local newspapers serving the communities near the DOE facility to be discussed in the hearing or meeting.

To expand public access to its records and deliberations, the Board established a bulletin board on the Internet that lists, among other things, the full text of every Recommendation made by the Board to the Secretary of Energy. This bulletin board became available to the public in July 1994. As of January 31, 1995, more than 7,000 callers gained access to the bulletin board, and more than 2,500 copies were made of the 12 information categories currently available on the bulletin board. Also during 1994, the Board's staff provided information briefings to public interest groups at sites such as Pantex and Savannah River.

REVIEW AND EVALUATION OF STANDARDS

The Board's enabling legislation mandates Board review and evaluation of the content and implementation of standards relating to the design, construction, operation, and decommissioning of DOE's defense nuclear facilities. Since sound safety standards are the foundation of any nuclear safety program, the Board has developed a three-pronged approach to this important aspect of its responsibility.

First, the Board continues to emphasize the need for DOE to demonstrate its compliance with applicable standards at each defense nuclear facility. The Board has exerted considerable effort in evaluating the appropriate application of safety policy and standards to facilities at Savannah River, Rocky Flats, Pantex, Oak Ridge, Hanford, and other sites. These efforts are described in more detail in the following pages.

Second, the Board has clearly defined the need for DOE to improve the safety standards it implements throughout the weapons complex, and has strongly encouraged DOE to apply standards in areas in which the Department has provided little or no guidance. DOE has developed new standards in critical areas including plutonium processing and storage, safety analysis, natural phenomena hazards, Operational Readiness Reviews (ORRs), and configuration management. Additional DOE guidance covering other areas is in preparation.

Third, the Board has recommended (in Recommendation 93-1) that DOE evaluate the safety standards applied at facilities involved in the assembly, disassembly, and testing of nuclear weapons compared to those used at production facilities. Based on this evaluation, DOE is to adjust its standards to provide adequate levels of safety for all defense nuclear facilities. Further, DOE is to ensure that the level of safety is comparable to that provided by similar commercial nuclear facilities.

Under its mandate for standards review, the Board has issued five formal sets of Recommendations, numbered 90-2, 91-1, and 93-1, 94-2, and 94-5 explicitly aimed at improving the safety standards within the complex. The specific actions recommended will require strong and dedicated effort by DOE to ensure development of a full compendium of suitable safety standards and proper implementation of those standards.

Improvements in DOE's standards program in response to Board Recommendations are just beginning. Meaningful standards evaluations at Hanford and the weapons laboratories have begun only recently. The Department-wide evaluation of standards, including training and qualification of personnel whose primary responsibility is the establishment and implementation of safety standards within the weapons complex, is barely underway.

DOE has also begun the development of a series of formal documents which identify the standards and requirements that apply to individual defense nuclear facilities. The Board will continue its oversight of this development effort to ensure identification of appropriate standards. The Board will need to increase the number and depth of its site and facility evaluations to review implementation of the standards in the field.

Over the coming months, the Board will place particular emphasis on the identification and use of standards applicable to the changing mission of the Department. For example, the Board will apply additional review effort to DOE's development and use of standards applicable to processing of plutonium and other materials left in process lines at Rocky Flats and Savannah River. More attention also will be placed on DOE's development and implementation of standards for use in transition and decommissioning activities. The Board's emphasis during FY 1996 will be for DOE to show that it is more effectively using acceptable standards as bases for the safe operation of its facilities.

The Board will also scrutinize closely DOE's ongoing rulemaking efforts to ensure that the Department's response to changes in the Price-Anderson provisions of the Atomic Energy Act provides appropriate degrees of protection to the health and safety of the public, including on-site workers. The Board's most recent Recommendation, 94-5, addresses the need for improved integration of safety-related Orders, standards and rules.

RADIATION AND ENVIRONMENTAL HEALTH AND SAFETY

The Board has conducted extensive reviews and assessments of radiation and environmental protection programs at DOE Headquarters and DOE defense nuclear facilities.

As a result of its radiation protection program assessments and reviews, the Board identified a need for increased DOE attention in five major areas: (1) DOE management and leadership in radiation protection programs; (2) radiation protection standards and practices at defense nuclear facilities; (3) training and competence of radiation protection technicians and supervisors; (4) analysis of reported occurrences and correction of radiation protection program deficiencies; and (5) understanding and attention to radiation protection issues by individuals in DOE and its contractor organizations.

Based on the weaknesses identified in these reviews, the Board issued Recommendation 91-6 in December 1991. The Board continues to monitor DOE's actions in carrying out the Implementation Plan for Recommendation 91-6 until full implementation is achieved. The Board has conducted assessments of radiation protection programs and issues at Savannah River, Rocky Flats, Hanford, Pantex, Oak Ridge Y-12, Los Alamos National Laboratory, Lawrence Livermore National Laboratory, Fernald Environmental Management Project, Sandia National Laboratory, and the Nevada Test Site. Assessments of environmental protection were carried out at Pantex, Y-12, Mound, Los Alamos, Rocky Flats and Sandia. Waste management assessments were completed at Savannah River, Los Alamos, Sandia, Hanford and the Nevada Test Site.

The Board has also undertaken studies of issues of special concern, including, for example, external dosimetry at Pantex and throughout the complex; burning of high explosives containing uranium at Pantex; the role of DOE's Radiation Control Coordinating Committee in improving radiation protection practices; radiation control of radiography processes; and hazards of waste tanks at Savannah River. The first phase of a study of the application of the "As Low As Reasonably Achievable" (ALARA) principle for radiation exposure at defense nuclear facilities was recently concluded. The second phase, assessing practical implementation of planning for work in areas with radiological and other hazards, is now underway.

During FY 1996, as DOE improvements in occupational radiation control continue, the Board intends to place increased emphasis on issues relating to DOE's changing mission. Among these issues are site decommissioning, environmental restoration and waste management, and the implications of these activities on worker and public health and safety. Specific concerns include, among others, standards for release of materials after clean-up; programs for environmental monitoring; planning for work in hazardous environments; and development of radiation control performance indicators applicable to unique cleanup situations.

WEAPONS FACILITIES

For the foreseeable future, nuclear weapons will remain a vital component of United States national security policy. DOE will remain responsible for maintenance and support of the active stockpile, including retaining the capability to resume nuclear testing by Presidential direction, as well as for dismantlement of retired weapons. The nature of DOE's mission, however, continues to change at a dramatic pace, and the Department's efforts to adjust to these changes at times can result in the creation of new areas of safety concern. The Board's evaluation and assessment of these concerns has led to initiatives within DOE to update, modify, and integrate the approach to safety at defense nuclear facilities that assemble, disassemble, and test nuclear weapons (that is, the weapons complex) and at those facilities where weapons-related research and development activities are performed (the national laboratories).

However, these and other initiatives will take many years to fully implement and to realize improvements throughout the complex. Continued Board attention will be required to ensure that the necessary degree of improvement is achieved, on an acceptable schedule, and in a fully integrated manner.

The loss of experienced weapons program personnel from DOE, from the national weapons laboratories, and from contractor organizations continues to limit and significantly slow DOE's ability to address both systemic and site-specific safety problems. Dismantlement continues to be a primary mission for DOE; problems with the conduct of dismantlement operations and with the definition and documentation of the safe operating envelope at the Pantex facilities continue to arise. In addition, as the weapons complex shrinks, existing research and development facilities may be called on to assume limited production missions. These facilities are just now beginning to incorporate greater formality in the manner in which they are operated.

The lack of an integrated approach to problem-solving within DOE further slows both the identification of problems and the development of coordinated solutions for weapons facilities. As the amount of available expertise within DOE continues to shrink, while facilities are used differently than originally envisioned, the Board's health and safety review and evaluation activities will have to increase.

PANTEX PLANT -- The Board continues to focus many of its resources on safety reviews at the Pantex Plant. This includes two full-time site representatives providing daily on-site coverage. The focus of these reviews has been on six major areas: (1) the implementation of standards, including DOE Orders, regulations and other safety requirements; (2) recruitment, retention, education, and training of qualified technical personnel; (3) safety aspects of conduct of operations; (4) safety aspects of the assembly and disassembly of nuclear weapons, as well as interim storage of weapons components; (5) the identification and control of the facility safety envelope; and (6) associated design laboratory support. These efforts are still in the development and implementation stages and will require continuing review and oversight.

The retirement and dismantlement of nuclear weapons and associated components continue to be primary missions for Pantex. The Board is conducting rigorous technical evaluations of the dismantlement procedures and oversight of dismantlement processes to ensure that all potential safety issues are adequately addressed and resolved. In addition, the Board has identified problems with the conduct of dismantlement operations and with the definition, control, and documentation of the facility safety envelope. These will require close oversight by the Board.

The disposition, disposal, and storage of the dismantled nuclear weapon components pose challenging, long-term technical problems inherent in the unique materials. DOE must vigorously analyze these technical problems with special attention to any possible age dependent deterioration problems that could affect safe, long-term storage of the materials.

DOE's dismantlement efforts over the next several years will result in the interim storage and monitoring of several thousand additional pits at the Pantex Plant, and of other component parts elsewhere in the weapons complex. DOE has developed processes to increase the number of pits that can be stored in existing magazines. Development of robotics systems to perform storage and inspection operations and thereby reduce worker radiation exposure is in progress. The Board will continue to monitor these activities to ensure that proper conduct of operations are employed in these storage and inspection operations.

Another area the Board will continue to review is the support provided by the design laboratories to the dismantlement activities at the Pantex Plant. Safety dictates active participation by the weapons design laboratories in these activities. In Recommendation 93-6, *"Maintaining Access to Nuclear Weapons Expertise in the Defense Nuclear Facilities Complex,"* the Board urged DOE to strengthen the participation of design laboratory experts in the safety aspects of disassembly and modification of weapons. The Board will closely follow DOE's and the design laboratories' actions in implementing this Recommendation.

These important safety issues emphasize the need to continue conducting technical design reviews of, and oversee preparations for, upcoming dismantlement programs and facility start-ups. As a result of a reporting requirement of the Board in FY 1995, DOE is to conduct an assessment of their process for readiness reviews for all weapons operations including dismantlement, termed Qualification Evaluations (QE). Corrective actions are expected to be developed for the QE process and implemented for the several QEs planned by DOE in FY 1996. In addition, Operational Readiness Reviews for certain new facilities at the Pantex Plant are planned. The Board will closely follow DOE's actions in implementation of these readiness reviews.

The Board continues to devote considerable attention to the review of the Safety Analysis Reports being developed for Pantex facilities. This includes evaluation of required upgrades and revisions to existing Safety Analysis Reports to meet current industry standards, as well as review of new reports developed by DOE for those facilities presently without them. The Board has documented the status and problems encountered in the Pantex program in Board correspondence to DOE.

The safety analyses developed for the aircraft crash hazard at the Pantex Plant have received considerable attention by the Board, as well as numerous other public groups. In response to a reporting requirement in FY 1993 and follow-on review by the Board, DOE has determined that errors were made in the probability estimates for the aircraft hazard. DOE is now taking steps to obtain accurate overflight data, correct the safety analyses and take other actions in cooperation with other governmental agencies to reduce future overflights in FY 1996 and beyond.

NEVADA TEST SITE -- Underground nuclear testing at the Nevada Test Site (NTS) remains suspended, in accordance with the President's testing moratorium order. The President has directed, however, that DOE retain the capability to resume testing. In Recommendation 93-6, the Board recommended that DOE identify the skills and knowledge needed to conduct nuclear testing operations safely, and that the Department initiate programs to capture and document critical safety information associated with testing. The Board further recommended that DOE develop a program for maintaining expertise in operations key to safety of nuclear testing at NTS, to ensure that if the President orders resumption of testing in the future, it can be performed safely.

As part of DOE's implementation efforts for Recommendation 92-6, *"Operational Readiness Reviews,"* DOE has developed a readiness review process appropriate for nuclear testing operations. Implementation activities for these Recommendations by DOE, including the long-term testing exercise program, will proceed throughout FY 1995 and FY 1996, and will require Board oversight to evaluate their adequacy. Should the President authorize nuclear testing or non-nuclear testing involving special nuclear materials, the Board will need to increase its review activities substantially.

In FY 1993, in response to a reporting requirement of the Board, DOE chartered an independent review of the process by which nuclear explosive safety is evaluated at NTS. The results of this review led to a commitment by DOE to revise significantly its approach to the conduct of operational safety reviews of nuclear explosive operations. The changes called for included the development of three new nuclear explosive safety evaluation and appraisal standards in FY 1995 and implementation of the standards in FY 1996 and beyond. Comprehensive documentation of the nuclear explosive safety aspects of NTS operations, while experienced DOE and contractor personnel are still available, will be of critical importance should nuclear testing operations be resumed after a lengthy hiatus. It is expected that several years will be required to bring all safety aspects of nuclear explosive operations at NTS into compliance with the new standards.

OAK RIDGE Y-12 PLANT -- The Y-12 plant is the principal site in the DOE weapons complex for processing uranium and other special materials such as lithium. In FY 1996, the Board will continue to assess the safety issues at Y-12 and will increase its oversight of the safe storage of fissile materials and nuclear waste at Oak Ridge National Laboratory.

In late FY 1994, the Board's staff identified several noncompliances with nuclear criticality safety limits in the nuclear material storage vaults at Y-12. Follow-on reviews by Y-12 plant management identified over 1,000 noncompliances with safety limits and controls, indicating an overall breakdown in the expected level of conduct of operations. These deficiencies led the Board to issue Recommendation 94-4. Development and implementation of DOE's corrective actions will be closely followed by the Board in FY 1995 and FY 1996. In addition to monitoring DOE's response to Recommendation 94-4, the Board plans to concentrate its oversight in FY 1996 in the following areas; assessing the degree to which DOE and its contractors adhere to DOE Orders and Rules; evaluating efforts to improve radiological controls; and assessing the decontamination and decommissioning of surplus facilities.

Reviews at the Oak Ridge National Laboratory (ORNL) will include assessing the safe storage of U^{233} and radioactive waste. ORNL stores low-level waste and transuranic waste. The Board recently initiated review of storage of Uranium Hexaflouride (UF_6) at the K-25 site and at the Portsmouth, Ohio and the Paducah, Kentucky gaseous diffusion plants. This huge stockpile of UF_6 is stored in containers that recent information suggests may not be adequate for long-term storage. The Board will closely monitor DOE actions in FY 1996 in handling inspection and maintenance of the UF_6 containers at these sites as well as DOE progress in developing remedial actions to resolve the long-term storage issue.

LOS ALAMOS NATIONAL LABORATORY -- During a public meeting and hearing at Los Alamos, NM, in November 1993, the Board underscored the necessity for appropriate compliance with DOE safety Orders at the TA-55 Plutonium Facility. As a consequence, Los Alamos National Laboratory (LANL) began an Order compliance effort consisting of a phased approach. The Board is working with LANL to develop appropriate methods of complying with safety Orders and other requirements in a research atmosphere.

During public meetings in Washington, D.C., the Board reviewed operations in the TA-55 Plutonium Facility, and Board staff conducted on-site reviews of those activities at LANL. Compliance with procedures has improved.

The Board has also emphasized the importance of adequate safety analyses, including evaluations of seismic issues. For example, DOE and LANL have changed their approach to handling ventilation of the TA-55 Plutonium Facility during a power outage. Reviews of the effectiveness of DOE guidance on Safety Analysis Reports are underway.

LANL has drafted a Seismic Program Plan to guide the assessment of structures. As part of the plan, LANL is evaluating the abilities of the TA-55 Plutonium Facility and some other structures to withstand seismic events. The Board will evaluate these analyses as they become available over the next few years.

The Board continues to review planned upgrades to the Chemistry and Metallurgy Research (CMR) building.

LAWRENCE LIVERMORE NATIONAL LABORATORY -- During FY 1994, the Board's reviews concentrated on obtaining an understanding of the hazards and operating practices at Lawrence Livermore National Laboratory (LLNL).

The Board's review of the status of LLNL safety analysis documentation determined that LLNL and DOE have had difficulty in completing and approving, respectively, the safety analysis reports necessary to define the safe operating envelope for certain facilities. Future reviews will ensure safety analyses are fully completed and the unreviewed safety questions are reviewed, as appropriate, for proposed and evolving research and development.

Recent Board reviews of personnel training and qualification programs and operations indicate a need to continue upgrading these areas. Future reviews will track improvements in these, as well as discipline in operations. The Board will continue to review programs for maintenance activities.

SANDIA NATIONAL LABORATORIES -- Sandia National Laboratories (SNL) operates defense nuclear facilities to conduct research and development of components and systems for nuclear weapons including reactors and other radiation, inspection and handling facilities. To date, Board reviews have addressed safety programs and focused on training and qualification of operations personnel, conduct of operations, and radiation protection.

DOE is planning to use the Annular Core Research (ACRR) as a national source of Molybdenum-99 (Mo-99). Modifications to the ACRR for the new Mo-99 production mission are planned in FY 1996. Additionally, with the decision to stop production operations at the Pinellas Plant, SNL will be preparing to take on added responsibilities related to consolidation and reconfiguration of the weapons complex. The Board will increase its current oversight activities to follow start-up and operation of the Radioactive and Mixed Waste Management Facility (RMWMF) and follow SNL preparations for new weapons complex missions.

MOUND PLANT -- The T-Building and the SW-R Tritium Complex are the only defense nuclear facilities in the operational phase of the life cycle at the Mound Plant. These facilities are used to manufacture non-nuclear components for nuclear weapons including detonators, firesets, pyrotechnic devices, thermite processing, and the tritium reservoir surveillance testing. Numerous defense nuclear facilities at this site are entering the decommissioning phase.

The Board has conducted several reviews at Mound including Order compliance, training and qualification, conduct of operations, the facility representative program, the environmental program, radiological protection, safety analysis, decommission planning, and systems engineering. The Board has noted improvements in Order compliance in general, and in the training program, conduct of operations and quality assurance in particular. During FY 1996, the Board will seek additional improvement by DOE in training, conduct of operations, the facility representative program, the environmental protection program, Order compliance, and radiological protection.

DOE has recently reversed plans to transfer certain tritium processing operations from Mound to Savannah River and will be conducting these operations at Mound through FY 1996. The Board and its staff will closely follow these operations. As the Mound mission moves from production toward decommissioning, the Board intends to devote attention to such related health and safety issues as: transition of facilities from an operational to a decommissioned status; radioactive and mixed waste compaction and storage; facility decontamination and site remediation.

PINELLAS and KANSAS CITY PLANTS -- The Board conducted a review of Pinellas in January 1993, and conducted an in-house staff review of the Kansas City Plant in May of 1994. Pinellas will cease to function as a weapons facility when its weapons program support missions are transferred to the Kansas City Plant, LANL, and SNL. The Board will continue to follow the effect of the DOE reconfiguration and consolidation plans on the facilities at the Pinellas and Kansas City Plant through FY 1996.

WEAPONS COMPLEX RECONFIGURATION -- The reconfiguration of the weapons complex is governed by two DOE initiatives. *Stockpile Management*, which deals with the retention of capability to maintain the systems in the U.S. nuclear weapons stockpile, and *Stockpile Stewardship*, which deals with retention and development of the technological tools necessary to maintain confidence in the safety, reliability, and performance of U.S. nuclear weapons and their associated components. The thrust of these initiatives is to move towards a smaller, but still fully capable nuclear weapons complex.

DOE primarily plans to upgrade and use existing facilities, including facilities at the national weapons laboratories. This approach, to be completed over the next several years, will require extensive oversight activity by the Board to ensure application of sound systems engineering techniques for facility modifications and the development and implementation of responsible waste management and personnel exposure limitation strategies. DOE's desire for highly flexible manufacturing capabilities, intermittently using facilities that had previously been committed to research and development activities alone, will require our scrutiny throughout the next several years to ensure implementation of appropriate standards, conduct of operations principles, and operational readiness reviews.

MATERIALS PROCESSING AND WASTE MANAGEMENT FACILITIES

A large segment of the Board's activities involves those sites where nuclear materials processing and waste cleanup is being undertaken. These activities encompass cleanup efforts at various sites and long-term material storage and processing issues associated with surplus special nuclear materials from weapons disassembly activities. The Board's activities in this area continue to be challenged by the DOE's slow pace in addressing some serious materials processing and waste management issues. In particular, the pace of DOE's actions has been disappointing in addressing ongoing issues involving the Hanford tanks, SRS processing canyons and the Defense Waste Processing Facility, stabilizing plutonium material at the Rocky Flats Environmental Technology Site and several other sites, and proceeding in a disciplined and controlled manner in cleaning up sites and stabilizing nuclear materials. In May, 1994, the Board issued a Recommendation to bring the issue of special nuclear material (plutonium, uranium and spent nuclear fuel) to DOE's attention. Ensuring that DOE corrects the situation will be a major focus at those sites where large quantities of this material is being stored, such as RFETS, Hanford, SRS and Los Alamos.

HANFORD SITE -- The Board's efforts at the Hanford Site range from reviewing and monitoring specific safety issues unique to Hanford to reviewing and monitoring major programmatic issues that have the potential to affect the entire complex. While the Board has successfully influenced DOE to make progress in some areas, far-reaching safety concerns such as the disposition of spent fuel now corroding in on-site basins and the remediation of the Department's high level radioactive waste from years of weapons production will continue to receive considerable Board attention through FY 1996 and beyond.

The breadth of the Board's reviews of activities at Hanford has grown to the point that increased on-site presence became desirable during FY 1994, and a full-time Board staff member was assigned in June 1994.

In its last annual report, the Board listed five future review focus areas that it plans to emphasize as the nuclear weapons complex continues its transition from production to cleanup. All five of these areas involve activities at the Hanford Site directly. The issues are:

- Elimination of corroding spent fuel, though facilities normally used to process the fuel are shutdown;
- Surmounting technical problems associated with existing high-level radioactive waste storage tanks;
- Design and construction of new facilities for interim and long-term storage of wastes;
- The need for safe decommissioning of several major nuclear facilities; and
- The need to operate obsolete or shut-down processing facilities for short periods to remove in-process radioactive or hazardous materials.

The Board has conducted a thorough review of the status of spent nuclear fuel in the complex, including its storage and plans to place it in a safe condition. The K-East Basins, where spent fuel is corroding now, has received considerable Board attention. In part, DOE's sluggish performance to remediate the situation prompted the Board to issue Recommendation 94-1, urging DOE to accelerate the program to place the deteriorating fuel (as well as other special nuclear material) in a stable configuration for interim storage. As necessary to monitor DOE's response to Recommendation 94-1, the Board intends to continue to pursue DOE's action to clean up the corroding spent fuel in the K-East Basins.

The existing high level radioactive waste storage tanks continue to be a source of several safety concerns at Hanford. These include:

- Potentially reactive mixtures in the tanks -- many tanks contain potentially reactive mixtures of organic chemicals and nitrates that must be kept moist to ensure safe interim storage;
- Potential hazards in the vapor space in the tanks -- these same organic materials might, under certain conditions, form a flammable mixture in the vapor space within the tank;
- Fissile material inventories -- the inventories for many of the tanks are not sufficiently well characterized to provide complete assurance that a criticality cannot occur;

- Heat generation in the tanks -- several tanks (for example, 106-C) contain high concentrations of fission products, which generate large amounts of heat and require the addition of cooling water to keep temperatures below boiling;

- Leaking tanks -- 67 of the 149 single-shell tanks are suspected of leaking liquids to the soil; and

- Hazardous vapors released from tanks -- The release of vapors from some tanks (for example, 103-C) containing significant amounts of organic materials; on several occasions, the vapors have adversely affected workers near such tanks.

Satisfactory resolution of these issues will require, as a first step, accurate and timely characterization of the waste. The Board emphasized this concern in Recommendation 93-5 calling for accelerating the program to characterize the waste in the tanks. In February 1994, DOE submitted an acceptable Implementation Plan for this Recommendation, including plans to complete sampling and characterization of all tanks with special safety issues by October 1995. However, the Department has fallen far behind the plan's schedule for characterizing the contents of the tanks, and it is not clear how the schedule might be recovered. This effort will require the Board's continued attention through FY 1996 to address all known tank safety issues and to identify as-yet unknown safety issues.

As part of the effort to remediate the tank waste at Hanford, DOE has embarked upon a project that includes six new one-million gallon double shell tanks, the Multi-functional Waste Tank Facility (MWTF). Concerns with the discipline of design development of these tanks, both in the managerial and technical areas, prompted the Board to issue Recommendation 92-4 which is leading to the implementation of a systems engineering approach to the design, construction, operation, and ultimate decommissioning of the MWTF.

DOE has committed to using a systems approach to the Tank Waste Remediation System (TWRS), of which MWTF is a part. The development of the various projects associated with the TWRS will require dedicated systems engineering to ensure effective analysis of the requirements for treatment, processing, and ultimate disposal of the waste. DOE's implementation plan for Board Recommendation 92-4 provides an acceptable strategy for using a systems approach for these critical projects. DOE expects to begin construction of the MWTF before the end of FY 1995 after a critical design review, with other projects expected to continue into the next century. This system development will entail detailed Board review and monitoring through FY 1996 and well beyond.

In addition to designing and constructing new facilities, DOE is preparing many existing facilities for long-term lay-up condition, with decommissioning to occur later. These preparations are part of a mammoth clean-up effort across the Hanford Site. For example, the PUREX facility is in the first phases of this process. The Board is concerned that the DOE shutdown and cleanout programs currently have no standardized requirements and guidance. Further, DOE has defined neither the endpoint nor the follow-on decommissioning criteria. Given these uncertainties, and the resultant potential adverse effects on public health and safety, especially on worker health and safety, the Board intends to closely monitor the progress of DOE in these shutdown and cleanout activities.

The Hanford Site contains several other major defense nuclear facilities that are scheduled for limited operations for material stabilization or waste treatment. Among these, the Board is particularly interested in activities scheduled to occur at the Plutonium Finishing Plant (PFP). Most of these facilities are scheduled to be started in FY 1995, but are likely to extend into FY 1996. Throughout the process, the Board will closely monitor and review DOE's efforts.

SAVANNAH RIVER SITE -- Board reviews at SRS increasingly are devoted to site-wide programs, while still focusing on start-up and restart of major facilities. Site-wide programs of interest include: implementation of Recommendation 94-1, dealing with the stabilization of fissile materials; continued progress in implementing Recommendation 90-2; decommissioning of facilities; geotechnical issues; and conduct of proper readiness reviews, as specified in Recommendation 92-6. Current major facility activities include restart of F-Canyon and FB-Line and start-up of high level waste facilities.

Several basic requirements contained in Recommendation 94-1 involve stabilization of fissile materials at Savannah River. Among these materials are solutions containing plutonium and trans-plutonium elements in process lines in F- and H-Canyons, plutonium metal in storage, and irradiated fuel and target assemblies in basins. The Board intends to monitor closely efforts to stabilize the materials during the coming months, extending into FY 1996 and beyond.

DOE Order compliance is an important element of DOE's implementation of Board Recommendation 90-2. The Board has invested considerable resources assessing the adequacy of DOE Order compliance verification and has continued its oversight of DOE and contractor efforts to ensure proper implementation of health and safety related Orders. As contractor and DOE Order compliance verification programs mature, continuing Board effort will be needed to confirm adherence to directives that implement Order requirements. Significant progress has been made at chemical separations facilities, but continuing Board attention through FY 1996 will be required to ensure site-wide implementation of these standards initiatives.

Several facilities at Savannah River have been, or are being prepared for, shutdown. Some facilities are deteriorating rapidly and could present significant hazards to workers in the future. The Board will oversee DOE's efforts to establish decommissioning priorities for facilities, including activities related to the Savannah River reactor facilities, the Separations Equipment Development Facility, and the Old HB-Line.

The Board continues to devote significant attention to geotechnical issues at the In-Tank Precipitation Facility (ITP) and H-Area Tanks by reviewing the adequacy of design bases. In the past year, the Board has closely monitored DOE structural and geotechnical analyses of H-area high-level radioactive tanks and will continue to monitor any needed mitigation measures.

In addition to site-wide programs, the Board expects major facility-specific operational activities to continue into FY 1996. In recent years, these activities centered on the start-up of the Replacement Tritium Facility (RTF) and restart preparations at the F-Canyon and FB-Line facilities.

Board reviews of start-up and restart activities have resulted in resolution of significant safety issues. The Board undertook increased review efforts in mid-1993 at H Canyon, F-Canyon, and FB-Line. Review of the implementation of Recommendation 92-6 in performing operational readiness reviews will continue through FY 1996. Board planning has assumed restart of these separations facilities during FY 1995 and their continued operation for two to four years, until all in-process material has been removed from the F and H Canyons.

The Board has maintained a steady level of effort in reviewing safety aspects of the high-level radioactive waste management program at Savannah River. This includes the development and start-up testing at the Defense Waste Processing Facility (DWPF) and associated processes, such as the ITP Facility and the Extended Sludge Processing System. The Board intends to monitor closely DOE and contractor demonstrations of operational readiness for start-up of ITP, scheduled for early 1995, and for DWPF, scheduled late 1995. After DWPF start-up, the Board will continue to monitor safety aspects of operating DWPF and associated systems.

In 1994, the Board became involved in reviewing non-irradiated reactor fuel deinventory operations in Reactor Materials Area (M-Area) to ensure criticality safety. The Board expects its oversight of deinventory operations to continue well into FY 1996.

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE (RFETS)

Historically, the Board has structured its assessments of activities at RFETS around proposed resumption of plutonium operations, on a building-by-building basis. These reviews have emphasized compliance with the Board's Recommendations and DOE Orders, and public health and safety aspects of proposed transition activities. With the transition from production activities to clean-up of the site, the Board has focused more of its reviews on site-wide issues dealing with overall cleanup and reduction of risk to the public.

Many of the health and safety issues arising from the change in mission at RFETS have never been addressed before. The Board has conducted extensive evaluations of the storage of special nuclear materials, residues and plutonium solutions at RFETS. These review efforts were instrumental in getting RFETS to accelerate their schedule for processing plutonium solutions to a more desirable, stable form. Additionally, the Board's evaluations have led RFETS to improve storage conditions for some of the residues.

Despite these improvements, the Board concluded this past spring that conditions were still not suitable for safe interim storage of the residues and issued Recommendation 94-1 in May, 1994. It addressed the need to take near-term corrective actions to provide for processing of the residues to a form suitable for safe storage of these materials.

The FY 1996 activities of the Board will continue to emphasize the safe storage of special nuclear materials, residues and plutonium solutions. This will include encouraging DOE to pursue aggressively treatment of residues in response to Recommendation 94-1, and evaluating the contractor's activities as the materials are processed into forms suitable for storage. The Board also will monitor needed improvements in storage conditions.

DOE plans to consolidate storage of plutonium at the site into one building to lower the risks to the public from potential material releases until the Department decides on final disposition. The Board concluded that DOE's current activities to prepare the facility for its extended storage role were not logically structured or sufficiently encompassing in either detail or scope to ensure protection of public health and safety. Based on these concerns, the Board issued Recommendation 94-3 in September, 1994. Board reviews will focus heavily on this building, with particular attention to its ability to withstand natural hazards to ensure that the building is adequate for long-term storage of the plutonium.

In FY 1996, the Board also will focus on review of RFETS' waste management programs. These programs have become a more important aspect of the new mission of the site. Since DOE's management of low level wastes is self-regulated, the Board will pay particular attention to the Department's management of these wastes, in accordance with Recommendation 94-2.

As various facilities at RFETS make the transition from operation to decommissioning, the Board will expand review efforts to ensure that decommissioning adequately protects the health and safety of workers and the public.

As a part of evaluation of the planned FY 1996 activities, the Board will continue its reviews of important safety issues at RFETS, including: order compliance and standards utilization as delineated in Recommendation 90-2; radiation protection as delineated in Recommendation 91-6; training and qualification as delineated in Recommendation 92-7; conduct of operations; safety analysis; and criticality safety. The Board also will continue its reviews of actions responding to recommendations specifically related to RFETS, including Recommendations 90-4, 90-5 and 90-6.

The Board considers it very important that DOE and its new contractor provide adequate technical management and oversight. As part of Recommendation 93-4, the Board urged that new operating and management contracts provide technical management plans that clearly identify applicable technical requirements to ensure protection of workers and the public. To that end, the Board will carefully review the technical management plan in the new contract, and will follow closely implementation of these technical requirements for provision of adequate safety and for assurance that past gains in the safety culture at RFETS are not lost.

IDAHO NATIONAL ENGINEERING LABORATORY -- During the last two years, the Board has significantly increased its health and safety oversight at the Idaho National Engineering Laboratory (INEL).

The Board has focused its review efforts on several issues, including: systems engineering; management of spent nuclear fuel; Operational Readiness Reviews (ORR's); seismic and structural stability; radiological controls; electrical safety; and criticality safety.

Emphasis on development and implementation of safety-related Orders and standards is pervasive throughout the Board's reviews at the INEL, as is the assessment of compliance with those Orders and standards. Specific Board accomplishments and plans at INEL include:

> Systems Engineering: In FY 1994, the Board observed early development of the systems engineering approach in the effort conducted by the DOE site contractor (WINCO)[2] to analyze the management of high level waste (HLW) at the Idaho Chemical Processing Plant (ICPP) Tank Farm. For example, WINCO initiated work on a Tank Farm upgrade project as a result of that systems engineering analysis.
>
> The Board plans to continue to review the implementation of that system engineering study at the ICPP Tank Farm and to review the design, construction, and operation of any new facilities, such as the High Level Liquid Waste Evaporator (HLLWE) proposed in the study. LITCO plans to have this facility operating by June 1996.
>
> Management of Spent Nuclear Fuel: The issue of spent nuclear fuel is of continuing concern, as shown by its prominence in the Board's 1993 public meeting in Idaho Falls, and in Recommendation 94-1.
>
> Safety problems associated with corroding spent fuel in the CPP-603 fuel storage basins have been successfully mitigated. To date, 199 fuel elements had been transferred from CPP-603 to CPP-666, a newer and more structurally sound facility. DOE plans to continue the transfer of spent fuel from CPP-603 through the year 2000, until the spent fuel basins are empty and decommissioning activities start. The Board intends to monitor these efforts through FY 1996.
>
> Operational Readiness Reviews: During FY 1994, the Board monitored the ORR for the Second/Third Cycle and Denitrator (to remove the remaining in-process materials before the start of decommissioning activities).
>
> The Board plans to continue its efforts to ensure compliance with DOE Order 5480.31 and with the tenets of Recommendation 92-6. Through FY 1996, this activity will include the monitoring of ORR's for:

- New Waste Calcining Facility (NWCF);

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[2] DOE has announced its decision to consolidate INEL operation and management functions under a new contract awarded to Lockheed Idaho Technologies Company (LITCO).

- Further fuel transfers from the CPP-603 fuel storage basins to the CPP-666 Fuel Storage Area;
- Testing programs at the Advanced Test Reactor (ATR) that may fall within the realm of the defense nuclear weapons complex;
- Start-up of a proposed HLLWE at the ICPP Tank Farms; and
- Radioactive waste recovery and management activities at the Radioactive Waste Management Complex (RWMC).

Seismic and Structural Stability: In the area of seismic and structural stability, the Board's staff conducted reviews at the spent fuel storage basins in the CPP-603 and CPP-666 facilities. These reviews were consistent with the Board's commitment to devote significant attention to reviewing the adequacy of design bases of defense nuclear facilities.

The Board's reviews indicated that the design bases for the fuel basins may not be appropriately conservative. DOE will continue to work to resolve these issues through FY 1996. The Board plans to continue to observe refinement of the seismic and structural analyses and to monitor closely any modifications to the facilities that may be incorporated as a result of the analyses.

FERNALD SITE -- Based on several reviews over the past 3 years, the Board has identified issues that could potentially affect public and worker health and safety. Of primary concern were incidents that occurred during the startup of the Uranyl Nitrate Hexahydrate (UNH) stabilization project. These incidents included the exposure of personnel to nitrous oxide gasses and a spill of UNH solution on site. In December 1993, the Board provided expert testimony to the House Subcommittee on Oversight and Investigations, Committee on Energy and Commerce, concerning these incidents. Partly as a result of the lack of safe and disciplined conduct of operations on the UNH project, the Board issued Recommendation 93-4, which addressed the need for improvement in DOE's management of environmental restoration contracts.

During FY 1994, the Board's staff made several trips to the FEMP site to review corrective actions and preparations to re-start the UNH project. DOE plans to restart the UNH operations in FY 1995. Consequently, the Board intends to follow UNH project activities closely as Operational Readiness Reviews are conducted and the process is re-started.

Future projects at FEMP include the stabilization of thorium nitrate solutions and the vitrification of low enriched uranium wastes in the K-65 silos. Each of these programs will require Board oversight in FY 1996 and beyond.

WEST VALLEY SITE -- A facility to vitrify high-level waste is under construction at the West Valley Demonstration Project. The facility will be used to convert liquid waste stored on site to borosilicate glass logs for final disposal at a Federal high-level waste repository. As construction is completed and non-radioactive testing begins in FY 1995, the Board plans to observe closely the conduct of operations and training activities.

DOE plans to start hot vitrification in FY 1996. The Department expects to apply "lessons learned" at this facility to other high-level waste processing facilities at Savannah River, Hanford, and elsewhere. The Board intends to monitor the effectiveness of this anticipated intradepartmental transfer of technology.

WASTE ISOLATION PILOT PLANT (WIPP) -- Various administrative, procedural, and legal obstacles prevented the start of WIPP's test phase as originally planned by DOE. Because of these delays, the Board has reduced its level of WIPP-related efforts during the past year. DOE's revised plans for the WIPP test phase program now call for conducting the program at off-site laboratory locations. This change in direction will result in further delay in receipt of TRU waste at the WIPP site until the start of the disposal phase, scheduled for January 1998.

Monitoring of WIPP during FY 1994 was limited to tracking WIPP developments and research results and keeping abreast of public health and safety issues. The Board also obtained updates on the status of Sandia's evaluation of the long term performance of the WIPP, including waste testing activities being performed at LANL.

The Board anticipates that its level of effort will increase significantly in the fourth quarter of FY 1996, assuming the start of the disposal phase remains on schedule for early 1998. These additional efforts will involve close scrutiny of DOE and contractor readiness for the receipt of waste.

APPENDIX A

STATUTORY MISSION AND BACKGROUND OF THE BOARD

Congress established the Defense Nuclear Facilities Safety Board by Public Law 100-456 on September 29, 1988. The statutory mission of the Board includes the following major functions:

(1) Review and Evaluation of Standards -- The Board shall review and evaluate the content and implementation of the standards relating to the design, construction, operation, and decommissioning of defense nuclear facilities of the Department of Energy (including all applicable DOE Orders, regulations, and requirements) at each Department of Energy defense nuclear facility. The Board shall recommend to the Secretary of Energy those specific measures that should be adopted to ensure that public health and safety are adequately protected. The Board shall include in its Recommendations necessary changes in the content and implementation of such standards, as well as matters on which additional data or additional research is needed.

(2) Investigations -- The Board shall investigate any event or practice at a Department of Energy defense nuclear facility which the Board determines has adversely affected, or may adversely affect, public health and safety.

(3) Analysis of Design and Operational Data -- The Board shall have access to and may systematically analyze design and operational data, including safety analysis reports, from any Department of Energy defense nuclear facility.

(4) Review of Facility Design and Construction -- The Board shall review the design of a new Department of Energy defense nuclear facility before construction of such facility begins and shall recommend to the Secretary, within a reasonable time, such modifications of the design as the Board considers necessary to ensure adequate protection of public health and safety. During the construction of any such facility, the Board shall periodically review and monitor the construction and shall submit to the Secretary, within a reasonable time, such recommendations relating to the construction of that facility as the Board considers necessary to ensure adequate protection of public health and safety. An action of the Board, or a failure to act, under this paragraph may not delay or prevent the Secretary of Energy from carrying out the construction of such a facility.

(5) Recommendations -- The Board shall make such recommendations to the Secretary of Energy with respect to Department of Energy defense nuclear facilities, including the operations of such facilities, standards, and research needs, as the Board determines are necessary to ensure adequate protection of public health and safety. In making its recommendations, the Board shall consider the technical and economic feasibility of implementing the recommended measures.

Created as an independent establishment within the Executive Branch, the Board is made up of five Members appointed from civilian life by the President, by and with the advice and consent of the Senate. The Board's enabling statute requires that the Board Members be respected experts in the field of nuclear safety with demonstrated competence and knowledge relevant to the independent investigation and oversight functions of the Board. The Senate confirmed the first five Board Members on October 19, 1989.

During start-up of Board operations, the Board had trouble hiring individuals with the experience and skill levels needed to carry out the highly technical reviews associated with the Board's work. The National Defense Authorization Act, Fiscal Year 1991, (Public Law 101-510) changed the Board's personnel hiring authority, extending the "excepted service" provisions in the Atomic Energy Act to the Board. This personnel authority, identical to that used by the U.S. Nuclear Regulatory Commission (NRC), has been a decisive factor in enabling the Board to attract and retain technical staff expertise.

Congress enacted several amendments to the Board's enabling legislation as part of the National Defense Authorization Act, Fiscal Years 1992 and 1993 (P.L. 102-190). One change expanded the statutory definition of a "DOE defense nuclear facility" to include facilities and activities involved with the assembly, disassembly, and testing of nuclear weapons, and raised the Board's full-time employment ceiling to 150, an increase of 50 positions. Report language accompanying this legislation urges the Board to expand its activities over environmental restoration and waste management activities, using existing statutory authority.

As provided by statute, the Chairman serves as the chief executive officer of the Board and, subject to such policies as the Board may establish, exercises the functions of the Board with respect to:

- the appointment and supervision of employees of the Board;
- the organization of any administrative units established by the Board; and
- the payment of funds.

DEFENSE NUCLEAR FACILITIES
SAFETY BOARD

TECHNICAL SUPPORT CONTRACTS
(Status as of 01/31/95)

CONTRACTOR	CONTRACT EXPIRATION DATE	DESCRIPTION OF WORK
Dr. Harold M. Agnew	02/20/95	Provide expertise related to strategic safety issues associated with those facilities involved in the assembly, disassembly, and testing of nuclear weapons, specifically advising the Board in production, dismantlement/disposition, safe handling, testing, and storage of nuclear weapons, nuclear explosive devices, and nuclear weapon components, and the nuclear and hazardous materials used in these items; as well as assisting the Board in understanding the existing involvement of the design laboratories in these activities, and evaluating the sufficiency of current and proposed efforts.
Nicholas P. Armenis	06/02/95	Provide technical expertise to the Board, specifically with respect to the design of nuclear weapons being returned to the Pantex Plant for dismantlement, including historical insight relating to specific design and test details of the weapons systems.
Sanford Cohen & Associates, Inc.	04/08/95	Provide technical support to the Board, specifically involving review and evaluation of DOE's implementation, including that by Management and Operating contractors, of standards related to safety, such as: (1) statutes, orders, and implementation manuals; (2) standards developed outside the DOE community; and (3) other generally

CONTRACTOR	CONTRACT EXPIRATION DATE	DESCRIPTION OF WORK
Sanford Cohen & Associates, Inc. (Continued)	04/08/95	accepted standards. Review and evaluate implementation of standards associated with: chemical process safety; containment and confinement systems; and plutonium storage facilities and systems at defense nuclear facilities.
H&H Consultants, Inc.	09/30/96	Provide technical support to the Board, specifically in the review and evaluation of seismic engineering of structures, systems and components with particular emphasis on: analytical techniques utilized in structural analysis with special emphasis on seismic issues adequacy of various types of analyses performed by DOE contractors; development and relevancy of criteria used in the qualification of DOE facilities; integration of programmatic structural issues from the overall historical prospective; and risk assessment criteria review.
Dr. W.J. Howard	02/19/95	Provide expertise related to strategic safety issues associated with those facilities involved in the assembly, disassembly, and testing of nuclear weapons, specifically advising the Board in production, dismantlement/disposition, safe handling, testing, and storage of nuclear weapons, nuclear explosive devices, and nuclear weapon components, and the nuclear and hazardous materials used in these items; as well as assisting the Board in understanding the existing involvement of the design laboratories in these activities, and evaluating the sufficiency of current and proposed efforts.
Dr. William E. Kastenberg	12/17/95	Provide assistance in the areas of probabilistic risk assessment and human reliability analysis of defense nuclear operations, specifically involving

CONTRACTOR	CONTRACT EXPIRATION DATE	DESCRIPTION OF WORK
Dr. William E. Kastenberg (Continued)	12/17/95	matters associated with the identification of high risk accidents, prioritization of safety related issues, and development of risk based design criteria for facilities handling special nuclear materials.
Dr. J.A. Leary	12/31/96	Provide technical support to the Board, specifically involving review of operations and nuclear technology at facilities involved in processing and handling of nuclear materials. Examples of recent work include: reviews of Savannah River Site F-Canyon and FB-Line chemical process startup preparations, plutonium storage safety issues, and Rocky Flats plutonium stabilization activities.
Dr. James L. Liverman	03/11/95	Provide technical support to the Board in the general subject area of radiation protection, specifically involving review and evaluation of DOE's Implementation Plan for Board Recommendation 91-6 and on other radiological and environmental health and safety issues.
The MITRE Corporation	03/25/95	Provide technical support to the Board involving identification and assessment for adequacy the standards applicable to defense nuclear facilities. Identify applicable standards derived from regulations; DOE Orders and Notices; Requirements Identification Documents (RID's); consensus, national and international standards; and other technical standards affecting DOE's nuclear safety policy. Assess DOE Orders/RID's for adequacy using commercial and consensus standards.
Meyers & Early, Ltd.	09/30/95	Provide technical support to the Board involving the review of documents made available concerning

CONTRACTOR	CONTRACT EXPIRATION DATE	DESCRIPTION OF WORK
Meyers & Early, Ltd. (Continued)	09/30/95	the In-Tank Precipitation facility at the Savannah River Site. From a process-safety perspective, provide technical expertise in evaluating the process system design to assess the design adequacy, and compare the process system design to commercial chemical safety standards.
Dr. Sol Pearlstein	12/31/95	Provide technical expertise related to criticality safety and other nuclear physics related issues. Specifically, provide technical support to the Board in the review of criticality analyses associated with solutions and solids storage and operational accidents, review of defense criticality experiments at LANL, and implementation of Board's Recommendation 93-2.
Paul C. Rizzo Associates, Inc.	09/30/96	Provide technical support to the Board, specifically in the review and evaluation of seismic engineering of structures, systems and components with particular emphasis on: geotechnical investigation and soil mechanics; systems engineering; seismological hazards; safety analysis; hydrology; and environmental related issues.
Duane C. Sewell	01/09/96	Provide expertise related to strategic safety issues associated with those facilities involved in the assembly, disassembly, and testing of nuclear weapons, specifically advising the Board in production, dismantlement/disposition, safe handling, testing, and storage of nuclear weapons, nuclear explosive devices, and nuclear weapon components, and the nuclear and hazardous materials used in these items; as well as assisting the Board in understanding the existing involvement of the design laboratories in these activities, and evaluating the sufficiency of current and proposed efforts.

CONTRACTOR	CONTRACT EXPIRATION DATE	DESCRIPTION OF WORK
Stevenson & Associates	09/30/96	Provide technical support to the Board, specifically in the review and evaluation of seismic engineering of structures, systems and components with particular emphasis on: (1) the applicability and content of orders and standards developed by DOE and its contractors as well as existing codes and standards used at DOE facilities; (2) the applicability of commercial nuclear regulations as they apply to DOE facilities; (3) quality assurance related matters; (4) Probabilistic Risk Assessment related matters; and (5) hazard classification.
System Planning Corporation	01/31/96	Provide technical support to the Board, specifically involving evaluation of standards and operations and maintenance activities at defense nuclear facilities, including training and qualification programs for technical personnel. Recent work has included, for example, assessing nuclear weapons disassembly operations at the Pantex Plant and interviewing Pantex production technicians to assess their fundamental knowledge level on nuclear explosive safety, radiation hazards, and conduct of operations.
Dr. Gerald Tape	11/30/95	Provide expertise related to strategic safety issues associated with those facilities involved in the assembly, disassembly, and testing of nuclear weapons, specifically advising the Board in production, dismantlement/disposition, safe handling, testing, and storage of nuclear weapons, nuclear explosive devices, and nuclear weapon components, and the nuclear and hazardous materials used in these items; as well as assisting the Board in understanding the existing involvement of the design laboratories in these current and proposed efforts.

DEFENSE NUCLEAR FACILITIES SAFETY BOARD
1994 RECOMMENDATIONS CALENDAR

1/31/95 Update

DNFSB Recommendation Number, DOE Site Involved And Subject In Brief	Date Delivered To Sec'y Of DOE	Date Recomme. Appears In Fed. Register	Public Comments To Rec. Deadline Date	Sec'y Of DOE Response Due Date	Date Sec'y Of DOE Response Received	Date Response Appears In Fed. Register	Deadline For Public Comments To SOE Response	Implementation Plan Due Date	Date Implementation Plan Received
94-1 All Sites Improved Sched. for Remediation	05/26/94	06/03/94	07/05/94	09/01/94[1]	08/31/94	09/06/94	10/06/94	12/05/94	12/06/94
94-2 All Sites Low-Level Waste Disposal	09/08/94	09/15/94	10/17/94	10/31/94	11/08/94	11/16/94	12/16/94	02/14/95	
94-3 Rocky Flats Seismic and Safety Systems	09/26/94	10/04/94	11/03/94	11/18/94	11/21/94	11/28/94	12/28/94	02/27/95	
94-4 Oak Ridge Deficiencies in Criticality Saf.	09/27/94	10/05/94	11/04/94	11/21/94	11/18/94	11/28/94	12/28/94	02/27/95	
94-5 All Sites Integ. of Safety Rules, Orders	12/29/94	01/06/95	02/06/95	02/21/95					

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[1] Response originally due 7/18/94, SOE requested 45-day extension.

DEFENSE NUCLEAR FACILITIES SAFETY BOARD
1993 RECOMMENDATIONS CALENDAR

1/31/95 Update

DNFSB Recommendation Number, DOE Site Involved And Subject In Brief	Date Delivered To Sec'y Of DOE	Date Recomme. Appears In Fed. Register	Public Comments To Rec. Deadline Date	Sec'y Of DOE Response Due Date	Date Sec'y Of DOE Response Received	Date Response Appears In Fed. Register	Deadline For Public Comments To SOE Response	Implementation Plan Due Date	Date Implementation Plan Received
93-1 All Sites, Standards Utilization	01/21/93	01/28/93	03/01/93	1/ 04/28/93	04/27/93	05/10/93	06/09/93	08/09/93	2/ 08/25/93
93-2 All Sites, Critical Experiment Capability	03/23/93	03/30/93	04/29/93	05/14/93	05/13/93	06/04/93	07/06/93	09/02/93	08/10/93
93-3 All Sites, Tech. Capability in DNF Programs	06/01/93	06/08/93	07/08/93	07/23/93	07/23/93	08/06/93	09/06/93	11/04/93	3/ 11/04/93
93-4 All Sites, Env. Restoration Mgmt. Contracts	06/16/93	06/24/93	07/26/93	08/09/93	08/09/93	08/12/93	09/13/93	11/10/93	5/ 11/09/93
93-5 Hanford, Waste Tanks Char. Studies	07/19/93	07/28/93	08/27/93	09/13/93	08/31/93	09/09/93	10/11/93	4/ 01/24/94	01/25/94
93-6 All Sites, Maintaining Acc. to Nuc.Wea.Exp.	12/10/93	12/23/93	01/24/94	02/07/94	02/04/94	02/17/94	03/22/94	6/ 07/05/94	07/08/94

1/ 45-day extension requested by DOE; Board approved 3/23/93.
2/ Original Implementation Plan received 7/19/93; received amended IP that includes requested Board additions on 8/25/93.
3/ Implementation Plan also covered revised IP for Recommendation 92-7.
4/ Implementation Plan originally due 12/8/93, 12/14/93 received letter (dated 12/9/93) notifying that DOE needed a 45-day extension.
5/ 5/16/94 DOE notified Board that Item 4 of Recommendation is closed.
6/ Implementation Plan originally due 5/18/94, 5/19/94 received letter from SOE notifying Board that DOE needed 45-day extension.

DEFENSE NUCLEAR FACILITIES SAFETY BOARD
1992 RECOMMENDATIONS CALENDAR

1/31/95 Update

DNFSB Recommendation Number, DOE Site Involved And Subject In Brief	Date Delivered To Sec'y Of DOE	Date Recomme. Appears In Fed. Register	Public Comments To Rec. Deadline Date	Sec'y Of DOE Response Due Date	Date Sec'y Of DOE Response Received	Date Response Appears In Fed. Register	Deadline For Public Comments To SOE Response	Implementation Plan Due Date	Date Implementation Plan Received
92-1 Savannah River, HB-Line Oper. Readiness	05/21/92	05/29/92	06/29/92	1/ 10/14/92	10/20/92	11/06/92	12/07/92	**CLOSED 10/27/92**	**SUPERSEDED BY REC.92-3**
92-2 All Sites, DOE Facility Rep. Program	05/28/92	06/04/92	07/06/92	07/20/92	07/21/92	07/31/92	08/31/92	10/29/92	6/ 11/05/92
92-3 Savannah River, HB-Line Op. Read. Review	05/29/92	06/04/92	07/06/92	2/ 09/03/92	2/ 09/21/92	10/16/92	11/16/92	11/30/92	2/ 09/21/92 **CLOSED**
92-4 Hanford, Multi-Function Waste Tank Fac.	07/06/92	07/14/92	08/13/92	08/28/92	08/28/92	09/23/92	10/23/92	5/ 02/05/93	7/ 11/07/94
92-5 All Sites, Discipline of Operation	08/17/92	08/28/92	09/28/92	3/ 11/27/92	3/ 12/18/92	01/08/93	02/08/93	04/08/93	3/ 12/18/92
92-6 All Sites, Operational Readiness Review	08/26/92	09/02/92	10/02/92	10/19/92	10/20/92	11/06/92	12/07/92	02/04/93	8/ 04/04/94
92-7 All Sites, Training and Qualification	09/22/92	09/28/92	10/28/92	4/ 12/28/92	01/21/93	01/28/93	03/01/93	4/ 06/14/93	9/ 11/04/93

1/ 45-day extension requested, Board approved on 7/17/92; DOE response to be sent within 30 days of receipt of DNFSB HB-Line report, which was delivered 9/14/92.

2/ 45-day extension requested for response, Board approved 7/17/92; DOE response dated 9/15/92 and received 9/21/92, Implementation Plan was included; Recommendation closed per 2/94 Annual Report.

3/ 45-day extension requested for response, Board approved 10/23/92; DOE response and Implementation Plan received together.

4/ 45-day extension requested for response, Board approved 12/2/92; 4/28/92 received DOE notice of 45-day extension for submitting Implementation Plan.

5/ Received DOE notice of 45-day extension for submitting Implementation Plan.

6/ 1/15/93 Board letter to SOE stating Implementation Plan be revised.

7/ Original Implementation Plan received 2/4/93; Due to deficiencies, DOE has submitted revisions on 3/18/94 and 11/7/94.

8/ Original Implementation Plan received 1/19/93; Received revised IP 9/17/93; Received revised IP 4/4/94, dated 4/1/94.

9/ Original Implementation Plan received 6/14/93; Received revised IP 11/4/93 that also covered IP for Recommendation 93-3; Recommendation closed per 2/94 Annual Report.

DEFENSE NUCLEAR FACILITIES SAFETY BOARD
1991 RECOMMENDATIONS CALENDAR

1/31/95 Update

DNFSB Recommendation Number, DOE Site Involved And Subject In Brief	Date Delivered To Sec'y Of DOE	Date Recomme. Appears In Fed. Register	Public Comments To Rec. Deadline Date	Sec'y Of DOE Response Due Date	Date Response Appears In Fed. Register	Deadline For Public Comments To SOE Response	Implementation Plan Due Date	Date Implementation Plan Is Received	Public Hearing Date
91-1 All Sites Safety Standards	03/08/91	03/13/91	04/12/91	1/ 05/13/91	05/17/91	06/17/91	08/15/91	08/16/91	**CLOSED 10/27/92**
91-2 Savannah River, Narrative For Closure Pkg.	03/27/91	04/03/91	05/03/91	2/ 05/20/91	05/28/91	06/27/91	08/26/91	08/07/91	**CLOSED 10/27/92**
91-3 WIPP Readiness Review	04/25/91	05/01/91	05/31/91	3/ 06/17/91	3/ 07/24/91	08/23/91	3/ 09/03/91	08/07/91	**CLOSED 05/01/92**
91-4 Rocky Flats Operational Readiness Review	09/30/91	10/08/91	11/07/91	4/ 11/22/91	12/10/91	01/09/92	02/20/92	11/08/91	**01/16/92** **CLOSED 05/01/92**
91-5 Savannah River, Power Limits/K-Reactor	12/19/91	12/27/91	01/27/92	5/ 02/10/92	03/10/92	04/09/92	06/08/92	5/ 01/31/92	**CLOSED 02/94 ANN.RPT.**
91-6 All Sites Radiation Protection	12/19/91	12/27/91	01/27/92	6/ 02/10/92	03/10/92	04/09/92	06/08/92	7/ 06/23/93	

APPENDIX C
Page 4 of 5

1/ Originally DOE response due 4/29/91; Deputy SOE requested an extension to 5/13/91, Board approved 4/29/91.

2/ SOE response letter dated 5/14/91 and received 5/24/91.

3/ SOE response letter dated and received 6/5/91; Implementation Plan due date determined from date response was received.

4/ SOE response letter dated 11/6/91 and received 11/8/91.

5/ SOE response letter dated and received 1/31/92; response includes Implementation Plan.

6/ SOE response letter dated 2/7/92 and received 2/11/92.

7/ Per 8/5/92 letter to SOE, Implementation Plan not accepted; 1/15/93 DOE submitted revised Plan; 6/23/93 received Revision 2 Implementation Plan, dated 6/21/93; 7/2/93 letter to SOE stating Revision 2 IP was acceptable if implementation dates were revised; 5/10/94 received letter from SOE stating implementation dates were adjusted.

DEFENSE NUCLEAR FACILITIES SAFETY BOARD
1990 RECOMMENDATIONS CALENDAR

1/31/95 Update

DNFSB Recommendation Number, DOE Site Involved And Subject In Brief	Date Delivered To Sec'y Of DOE	Date Recomme. Appears In Fed. Register	Public Comments To Rec. Deadline Date	Sec'y Of DOE Response Due Date	Date Response Appears In Fed. Register	Deadline For Public Comments To SOE Response	Implementation Plan Due Date	Date Implementation Plan Is Received	Public Hearing Date
90-1 Savannah River, Reactor Operator Trng.	02/22/90	03/01/90	03/31/90	04/15/90	04/13/90	05/14/90	07/12/90	3/ 07/13/90	06/28/90 **CLOSED 10/27/92**
90-2 All Sites Standards	03/08/90	03/14/90	04/13/90	1/ 06/12/90	06/12/90	07/12/90	09/10/90	6/ 11/09/94	08/30/90
90-3 Hanford Future Tank Monitoring	03/27/90	03/30/90	04/30/90	05/14/90	05/23/90	06/22/90	2/ 08/13/90	08/13/90	**CLOSED 05/01/92**
90-4 Rocky Flats Operational Readiness Review	05/04/90	05/10/90	06/11/90	06/25/90	06/25/90	07/25/90	09/24/90	4/ 11/30/90	08/30/90
90-5 Rocky Flats Systematic Evaluation Program	05/18/90	05/24/90	06/25/90	07/09/90	06/20/90	07/20/90	09/18/90	7/ 05/04/94	08/30/90
90-6 Rocky Flats Plutonium In The Ducts	06/05/90	06/11/90	07/11/90	07/26/90	07/26/90	08/27/90	10/24/90	11/30/90	08/30/90
90-7 Hanford Modif. To Imple. Plan For 90-3	10/12/90	10/18/90	11/19/90	12/03/90	12/11/90	01/10/91	5/ 03/04/91	8/ 10/00/94	

1/ Secretary's response originally due 4/25/90; Board granted 45-day extension to 6/12/90.
2/ Implementation Plan due day figured from 5/14/90.
3/ Original Implementation Plan received 7/13/90; supplemental received 2/7/91 to rectify deficiencies.
4/ Original Implementation Plan received 11/30/90; modification received 2/15/91 to incorporate revisions and changes cited by Board.
5/ Implementation Plan due date figured from 12/3/90.
6/ Original Implementation Plan received 9/17/90; due to deficiencies, DOE has submitted revisions on 11/14/91, 6/15/92, 12/24/92, 7/20/93, and 11/9/94.
7/ 5/27/93 letter to SOE requesting revised IP; 6/25/93 SOE responded, will provide rev. by 10/15/93; rev. 1 IP received 10/15/93; 12/20/93 letter to SOE requesting IP be rev.; 5/4/94 received Rev. 2 IP.
8/ Original Implementation Plan received 3/7/91; Revision 1, dated 12/92, received 9/2/93; 5/10/94 received WHC-EP-0721 Program Plan as a replacement to IP; 12/2/94 received DOE/RL-94-110 as updated IP.

Overall DNFSB Resource Use By Major Site

	FY 94 (Actual)		FY 95 (Planned)		FY 96 (Request)	
	Technical Staff FTEs	Contractor Oblig. $K	Technical Staff FTEs	Contractor Oblig. $K	Technical Staff FTEs	Contractor Oblig. $K
Hanford	10	520	13	355	15	300
RFP	6	360	9	315	12	250
SRS	9	630	11	300	12	250
Weapons Sites *	20	1,380	26	1,000	30	1,000
FMPC, WIPP INEL***	5	170	6	80	9	100
Complex-Wide**	7	470	10	750	12	700
Totals	**57**	**3,530**	**75**	**2,800**	**90**	**2,600**

* Weapons Assembly, and Testing oversight added to Board jurisdiction in FY 1992. The Weapons Sites included in this added scope are Pantex, Oak Ridge-Y-12, Los Alamos National Lab, Lawrence Livermore National Lab, Sandia National Lab, Nevada Test Site

** Complex-Wide efforts include, but are not limited to, review and evaluation of DOE implementation of Board recommendations that have complex-wide impacts (e.g., 90-2, 93-3, 93-6, and 94-1), evaluation of the DOE standards development, and DOE complex-wide assessments such as DOE staffing and organization effectiveness, emergency response network effectiveness, occurrence reporting evaluations, and evaluations of DOE's technical competence.

*** Fernald Environmental Management Project; Waste Isolation Pilot Plant; Idaho National Engineering Lab

Overall DNFSB Resource Use By Technical Review Area

	FY 94 (Actual)		FY 95 (Planned)		FY 96 (Request)	
	Technical Staff FTEs	Contractor Oblig. $K	Technical Staff FTEs	Contractor Oblig. $K	Technical Staff FTEs	Contractor Oblig. $K
Training/ Qualification	6	550	8	400	8	300
Standards	6	950	9	850	14	750
Systems Eng. and Seismic	5	940	6	600	7	600
Weapons Eng.	10	550	14	450	18	400
Operational Readiness Reviews	6	200	6	100	6	100
Radiation Protection	4	90	5	100	5	100
Nuclear Safety/ Crit. Analyses	6	100	7	100	8	100
Waste Processing/ Decommissioning/ Decontamination	5	50	8	50	10	50
Quality Assur./ Elect. Systems/ Env. Monitoring/ & Other Technical Review Areas	9	100	12	150	14	200
Totals	**57**	**3,530**	**75**	**2,800**	**90**	**2,600**

THURSDAY, FEBRUARY 2, 1995.

NORTH KOREA REPROGRAMMING

WITNESSES

CHARLES B. CURTIS, UNDER SECRETARY OF ENERGY

KENNETH N. LUONGO, DIRECTOR, OFFICE OF ARMS CONTROL AND NONPROLIFERATION

ROBERT ALVAREZ, DEPUTY ASSISTANT SECRETARY FOR NATIONAL SECURITY AND ENVIRONMENTAL RESTORATION POLICY

OPENING REMARKS

Mr. MYERS. The committee will come to order. Pursuant to the decision of the committee Tuesday, the hearings today will be closed. Only those who have appropriate DOE security clearances will remain in the room.

Mr. Curtis, do you verify that members of the DOE have appropriate clearance?

Mr. CURTIS. Yes, sir.

Mr. MYERS. We have taken care of our side.

Mr. Secretary, I think you know why we asked you to come down, because the Department has asked for a reprogramming, and we felt more comfortable if we could find out a bit more about what is involved in the money to be reprogrammed so we can defend the action in the future if necessary.

There have been many articles written and comments made that have questioned the entire deal, so I realize that we may get into areas possibly that you won't have all the answers. But we hope you can help defend the necessity of doing this.

Tom, do you have a statement?

Mr. BEVILL. We are pleased to have you with us and are looking forward to hearing from you.

Mr. CURTIS. I have a written statement that I would like to submit for the record.

Mr. MYERS. Your entire statement will be entered into the record.

ORAL STATEMENT

Mr. CURTIS. Thank you, Mr. Chairman.

I thank you for the opportunity to appear before you to describe the Department of Energy's responsibilities under the Agreed Framework as it relates to the spent fuel from the 5 megawatt research reactor, and also an opportunity to provide some comments on the Agreed Framework itself so that you might put in context the activities and be able to judge the merits of the reprogramming request that we have placed before this committee; and also in recognition that you have a broader responsibility to the House to evaluate the Agreed Framework and the activities and actions thereunder.

I, of course, will attempt to respond to your questions with respect to the Agreed Framework in all of its aspects with the recognition that there are more authoritative witnesses both as to the agreement itself and certain aspects of implementation that are beyond the Department of Energy's cognizance, but I am prepared to respond more broadly to your questions.

If I may just lay out a threshold matter for the committee, because as it has been said with respect to this agreement that this framework is decidedly in the interest of the United States and in the interest of regional security, indeed global security.

My formal statement captures the remarks of Secretary of State Christopher and Secretary of Defense Perry that have addressed that subject, but I would like to offer just a brief comment on it if I may, to put this in some context because as my statement goes on to say, it is the belief of the administration that we are far better off with this agreement than we are without it.

OUTLINE OF AGREED FRAMEWORK

The President and Ambassador Gallucci who negotiated the agreement, and others on behalf of the administration have emphasized these essential points: that the arrangements with the North Koreans stop their nuclear program by freezing its component parts; that it prohibits further separation of weapons grade plutonium in North Korea; provides for the containerization of the plutonium-laden spent fuel from the 5 megawatt research reactor; requires shipment of the roughly 8,000 research reactor fuel rods out of North Korea; and it prevents the further construction or operation of two plutonium-producing graphite reactors of 50 megawatts and 200 megawatts.

It requires the dismantlement of the North Korean nuclear weapons infrastructure that is in place, and does not rely on trust. Compliance is monitored by the United States and also by the International Atomic Energy Agency. If North Korea doesn't comply, we can halt the agreement at any time. It is designed to match up with activities and conduct on the part of North Korea so that we can, rather than rely on trust in their agreement, confirm that they have held to their agreement.

Importantly, it requires North Korea to meet standards higher than those contained in the Nonproliferation Treaty. This is an essential point.

I would like to make a few comments to put that essential point in context, as to why we put such heavy emphasis on the immediate freeze of the North Korean nuclear program and the obligations assumed by North Korea to go beyond the requirements of the Nonproliferation Treaty.

Nothing in the Nonproliferation Treaty prohibits a signatory nation that observes the safeguards agreement from building reactors like these that are more suitable for the production of weapons grade plutonium than they are for energy, nor from reprocessing and separation of plutonium. Had the North Korean program been allowed to continue unabated it would have a potential plutonium production capability sufficient to produce enough separated plutonium to make between 60 to 100 nuclear weapons, depending on one's assumptions, by the year 2000, a year which I should point out that is three years in advance of the first fuel shipment expected to occur for the initial light water reactor called for in the Agreed Framework. I have had this put into a chart supplied to the committee staff and it is available for your review.

NORTH KOREA'S POTENTIAL PLUTONIUM PRODUCTION CAPABILITY

If I can point out several aspects about the chart, first of all, it draws upon public sources. It lays out its assumptions that I think are conservative assumptions. Just taking the 5 megawatt reactor from which the spent fuel was discharged, and that we are engaged in the process of canning, with the eventual removal of the spent fuel, if you just look at the production from that reactor, you see that we have in the 8,000 rods that have discharged into the pool an estimated 30 kilograms of plutonium. If reprocessed in the facility that North Korea has for reprocessing, that would produce enough separated plutonium for five nuclear weapons, and they could have done that in 1994.

[Deleted].

So if you just look at the 5 megawatt reactor, you can see that by the year 2000, that facility alone could have produced spent fuel which, if reprocessed, could permit a North Korea to separate plutonium adequate for a very significant number of nuclear weapons.

If you add to that the 50 megawatt reactor which is near completion and was expected to be completed in 1996, then the combined potential number of weapons from just those two reactors sums to 44 in the year 2000; and I suggest to you, these are conservative assumptions.

If you add in the 200 megawatt reactor at Taechon, which is a continuous fuel reactor so they don't have to shut their reactor down to take the fuel rods out. They say it is for energy production and that is why I have shaded this portion of the chart. If you were to add that much larger reactor, you can see that it is a factory for plutonium production.

All these reactors are graphite gas-cooled reactors more suitable for the production of plutonium than for the production of energy. That is the program and those are the facilities that North Korea had in place that have been frozen and are scheduled to be dismantled under this program.

I know there has been a lot of discussion in trying to relate and compare the plutonium-producing capability of the light water reactors called under this agreement to the plutonium-producing capability of North Korea's existing reactors. The point again is that before the first component of the first light water reactor is shipped, had this program not been frozen and instead permitted to proceed unabated, North Korea would have acquired the capacity to produce at least 44 and upwards to 119 nuclear weapons before that event occurred, in the remainder of this decade. This was a very serious threat to regional and global nuclear security that has been frozen under the agreement.

ROLE OF THE DEPARTMENT OF ENERGY

If I may now go to our activities and our role under this agreement because it has a sense of urgency to it as well. The primary role of the DOE in implementing the agreement will be to treat and stabilize the water in the basin containing the irradiated fuel discharge from the reactor at Nyongbyon last spring and to can this spent fuel for safe and secure storage. The spent fuel is believed to contain up to 30 kilograms of plutonium.

RESULTS OF VISITS TO NORTH KOREA

Experts have visited North Korea; we have had two visits to North Korea, one in November 1994 and one in January 1995, to identify and resolve the issues related to the spent fuel. During the November meeting the United States delegation was allowed to make an unprecedented trip to the nuclear complex and to observe and assess the spent fuel storage building basin and associated equipment. North Korea provided detailed information, including drawings of the facilities.

The visit confirmed the urgency of the steps required to safely store the fuel. Let me talk about that urgency.

This fuel is called Magnox fuel. It is unenriched uranium contained in a magnesium zirconium alloy. It is designed and meant to be reprocessed, so that this fuel was intended to be reprocessed to allow the plutonium to be separated. If North Korea could be trusted to safeguard it, there would be controls on the separated plutonium. But trusting North Korea with separated plutonium is decidedly a high-risk activity. So it is indeed urgent and important that we stabilize this pool and provide canning for these spent fuel rods so that further deterioration does not occur and does not provide an excuse for North Korea to reprocess the fuel on environmental health and safety grounds.

Moreover, if we can "can" this fuel early, it can greatly facilitate the imposition of International Atomic Energy Agency safeguards for the spent fuel in the canisters. We would prepare it for transportation so it is suitable for transportation out of the country at a later date.

[Deleted].

REQUESTED REPROGRAMMING

I won't burden the committee further with an oral statement other than to say, we are requesting a reprogramming of $10 million; $1.4 million of that will go to the stabilization and cleaning of the pool, which is important to arrest further deterioration of the fuel, and $6 million will go the actual canning, and $2.5 million to the administration of our activities, which involve travel and expert visits. Some of the experts are with me in this room.

PHOTOGRAPHS FROM NORTH KOREA

I have furnished to you the chart that shows the estimates for the weapons-capable plutonium separation that was possible had this program not been arrested. We also have photographs for the committee that show on the easel on the far left the actual spent fuel in Nyongbyon, and on the easel on the far right show recently returned photographs from the second visit.

That we are sitting in a hearing room in the United States House of Representatives looking at proofs of this character is itself a remarkable testament to progress, to arresting this plutonium weapons program that Korea, North Korea had under way.

I have with me Mr. Bob Alvarez, who was on both of the expert trips to North Korea, and he is available to answer questions for you. Also at the table with me is Mr. Ken Luongo, the Director of our office of Arms Control and Nonproliferation.

Thank you Mr. Chairman.

[The prepared statement of Mr. Curtis follows:]

Testimony
for
Charles B. Curtis
Under Secretary of Energy
before
House Committee on Appropriations
Subcommittee on Energy and Water Development

February 2, 1995

Thank you Mr. Chairman and members of the committee for the opportunity to appear before you today to discuss the Department of Energy's role in implementing the Agreed Framework between the United States and North Korea. This agreement will help to reduce significantly the nuclear danger on the Korean peninsula.

In my testimony I would first like briefly to describe the Department's activities in the context of the overall Agreed Framework.

Second, I will set out the specific tasks and challenges the Department is addressing in implementing its responsibilities concerning North Korean spent fuel.

Third, I will review the anticipated funding requirements for the range of DOE spent fuel implementation responsibilities.

I. The Framework Agreement

The Agreed Framework between the United States and North Korea was signed on October 21, 1994, to address international concerns -- and those of successive U.S.administrations -- about North Korea's nuclear program.

Secretary of State Warren Christopher recently outlined the *benefits of the Agreed Framework* in testimony before the Senate Foreign Affairs Committee. I quote those benefits:

> The Agreed Framework is the product of months of determined diplomacy and firm negotiation. It attains all our strategic objectives. It safeguards our allies South Korea and Japan. It lifts the specter of a nuclear arms race from Northeast Asia. It bolsters a nonproliferation regime essential to global stability. And it provides a basis for a potential reduction of tensions in the region.

> First, the Agreed Framework immediately froze the North Korean nuclear program. The North agreed not to restart its 5 megawatt reactor. It agreed to seal its reprocessing facility and eventually dismantle it. It agreed to cooperate with the United States to store safely the spent fuel from the 5 megawatt reactor -- rather than reprocess it -- and eventually ship it out of the country. In short, North Korea's capacity to separate or produce plutonium was ended. All these steps are now taking place under the careful scrutiny of the IAEA.
>
> Second, the North Koreans agreed to freeze construction of its 50 and 200 megawatt reactors and ultimately dismantle them. Absent this agreement, the two reactors would have been capable of producing enough plutonium for dozens of bombs each year.
>
> Third, under the Agreed Framework, North Korea will remain a party to the NPT. As such, it must fully disclose its past nuclear activities. North Korea is obligated to cooperate with whatever measures the IAEA deems necessary -- including special inspections -- to resolve questions about its nuclear program.
>
> Let me stress that as a result of the Framework, North Korea must fulfill additional obligations beyond its NPT requirements. These include no more reprocessing of spent fuel, the shipment of the spent fuel containing plutonium out of the country, and dismantlement of the gas graphite reactor system.

Secretary of Defense Perry in his recent testimony before the Senate Armed Services Committee outlined what he described as the *"unmistakable and unacceptable threat"* that the expanding North Korean nuclear program represented in *the absence of the Framework Agreement*.

> North Korea, "had it not been checked by the Agreed Framework, could conceivably have manufactured dozens of nuclear weapons annually by the end of this decade." He went on to point out that, "even if [North Korea] reneges on its obligations at some point, the IAEA monitoring presence will quickly detect a violation and we will be no worse off than in June 1994, when we were moving toward sanctions. We can activate the sanctions again if circumstances warrant, but in the meantime, each day of continued compliance represents additional time for transformative processes to take hold in the North and for dialogue to help defuse the tensions and hostilities that have clouded relations on the Peninsula for so many years." Massive force deployments and "the huge potential costs and the attendant risk of war" were thus avoided by the agreement.

Acting CIA Director William Studeman and DIA Director James Clapper also recently testified before the Senate Armed Services Committee. Their assessments suggest that North Korea under its new leader seems more interested in an accommodation that would lessen the risk of war with South Korea. Director Clapper, in what he characterized as "potentially historic change," testified that "the nuclear framework agreement, coupled with the leadership transition, offers the greatest promise of a significantly more stable Korean Peninsula than I have seen in the last ten years."

In short, not only are we *better off with* an agreement, we would have been *far worse off without* one.

II. The Department's Role

A key near term provision of the Agreed Framework is the storage of the spent fuel discharged from the North Korean 5 megawatt research reactor. Ambassador Gallucci, the negotiator of the agreement, has noted that the spent fuel is believed to contain up to 30 kilograms of plutonium and preventing its separation was one of the central U.S. objectives in negotiating the agreement.

The primary role of the Department of Energy in implementing the Agreed Framework is to stabilize the chemical condition of the water in the basin containing the irradiated fuel from the 5 megawatt reactor at Nyongbyon last Spring, and to package, or 'can,' the spent fuel for safe and secure temporary storage. The ability of the United States, in cooperation with North Korea, to achieve timely implementation of the agreement in this area is of great importance.

(a) November 1994 and January 1995 Trips to North Korea: Beginning Implementation of Cooperation on Spent Fuel

The October 21, 1994 Agreed Framework calls for a series of expert-level meetings for cooperative discussions on how best to store the spent fuel during the period it will remain in North Korea. To date, two such meetings have occurred. During November 13-19, 1994 a delegation of technical experts from the United States visited North Korea in an effort to resolve technical issues related to the safe storage and ultimate disposition of the spent fuel from North Korea's 5 megawatt reactor. The delegation discussions occurred in Pyongyang and Nyongbyon. From January 10-21, 1995, a second team made a follow-up visit to discuss fuel canning and logistical details and to make vital measurements of the storage basin water and spent fuel.

During the November meetings in Pyongyang, the U.S. delegation agreed to make every effort to ensure that the corrosion of the spent fuel in the fuel storage basin is minimized before placement in temporary storage containers (canning). The North Koreans agreed that canning of the fuel is necessary to minimize radiation hazards and fuel corrosion. Consensus was achieved with the North Koreans on the type of container to be used for canning the fuel. The fuel cannot, however, be placed in containers until the water in the basin has been treated. Consequently, agreement was reached on the outlines of a plan to: treat the water in the storage basin; remove the suspended matter which now prevents canning of the fuel; and perform additional treatment to slow the corrosion of the fuel until it can be placed in sealed containers.

The United States delegation in November 1994 was allowed an unprecedented trip to Nyongbyon. The technical meetings there centered on water treatment in the basin and the storage of the fuel discharged last Spring from the 5 megawatt reactor at Nyongbyon. The North Koreans were extremely cooperative in providing information. Our experts were allowed to observe and photograph the spent fuel storage building, basin, and associated equipment. North Korea also provided detailed, in-depth technical information, including drawings of the facilities and fuel elements. North Korea asked for the United States to supply instruments to measure and record important qualities of the basin water. They also asked for a viewing system to allow remote viewing of the fuel, which was not then visible.

During the January experts meetings, preliminary agreement was reached in regard to the modalities of implementation on (1) division of responsibilities between the United States and North Korea and (2) the extent of cooperation, pending confirmation by governments. In addition, a small team of our experts returned to the Nyongbyon nuclear complex with instrumentation for taking careful measurements of the water properties so that the water treatment system can be designed for the actual conditions to be treated. In addition,our experts used an underwater viewing system that gave us our first close look at the condition of the fuel itself.

It is in the interest of the U.S. to implement the water treatment plan and to provide and install these systems as quickly as possible to forestall reprocessing inside North Korea and contain future U.S. costs.

(b) The Near Term: Arresting Corrosion of the Spent Fuel

The North Korean spent fuel is a variation of a type of fuel known generically as Magnox. Each fuel element is a cylindrical rod of unenriched uranium metal. The rods are cladded with a finned outer covering of magnesium metal alloyed with zirconium. In all cases where Magnox fuel is used in a reactor, it is intended to be promptly reprocessed, as it has been in France and Britain. Once the fuel is used it is stored in water for a period of weeks to months to reduce radiation and heat levels of the fuel assembly. But since the magnesium cladding corrodes rapidly in water, it cannot be safely stored for sustained periods in an open basin.

North Korea did build a fuel storage system at Nyongbyon that should have been more than adequate for the amount of time they intended to leave the fuel in storage. They installed a system of sand filters and ion exchange columns for controlling the quality of the water in the basin. However, there were aspects of water treatment that they had not mastered: when they attempted to use their water treatment system, the sand filters rapidly plugged with algae that was growing in the basin caused by sunlight coming through south-facing windows. No provision had been made in their system for the techniques needed to remedy this problem. Their ability to control water basin chemistry was vitiated. Consequently, they have not stabilized the chemical conditions in the basin necessary to minimize the corrosion of the fuel. Therefore, the fuel is corroding at a difficult-to-predict rate in untreated water with a large quantity of sludge.

Corrosion of the fuel is not in our interest:

- First, extensive corrosion of the fuel can allow highly radioactive fission products such as cesium and strontium to be dissolved in the basin water. This would create a radiation hazard for inspectors safeguarding the fuel and for workers involved in transporting the fuel out of North Korea.
- Second, if the fuel severely corrodes, it will be virtually impossible to verify the number and condition of the rods in the basin, opening questions about possible undetectable diversions of fuel.
- Third, left untreated, extensive corrosion could create a health-related justification in the minds of the North Koreans for reprocessing the fuel.

The Department of Energy has experience in solving such difficult water treatment problems. The U.S. technical team formulated and explained to the North Korean engineers a plan for clarifying the water and controlling the concentration of chemicals that promote fuel corrosion. Consultations with French and British experts who have experience with similar fuel storage basins have confirmed the soundness of the approach: (1) kill any algae in the water by passing the water through a chamber where it can be exposed to intense ultraviolet light; (2) treat the biological debris so that it will not remain unfilterable; (3) if necessary, add a chemical agent to the water to cause the particles of organic matter in the water to clump together, making them easier to filter; and (4) clarify the water by passing it through a disposable cartridge filter.

There are approximately 500 cubic meters of water in the basin – an amount roughly the size of a large swimming pool. Clarifying this amount of water once the necessary treatment system is installed and operating is estimated to take approximately three weeks.

In last month's technical delegation visit to North Korea our engineers took with them instruments to measure the properties of the water in the basin. Interestingly, changes in temperature and other factors caused the suspended matter in the basin water to settle somewhat and it was possible to view the fuel from the surface. Treatment of the water remains essential nevertheless. The fuel and bottom of the basin are covered with fine particles which rapidly cloud the water if anything is moved. This condition must be remedied for canning to take place.

Based on the information our experts have gathered from their visits we have designed a suitable water treatment system capable of being deployed as soon as funding allows.

(c) Next Steps: Canning the Spent Fuel

The spent fuel cannot be placed in containers until the water in the spent fuel basin is clarified; the material cannot be temporarily stored in preparation for shipment out of the country until it is canned.

We seek to accomplish the canning of the North Korean irradiated fuel as soon as possible. North Korea accepts our proposed can design for storage. Canning is necessary to avoid severe corrosion of the fuel elements in the basin and dispersal of highly radioactive fission products into the environment.

It is anticipated that the fuel will need to remain in cans for a period of four to seven years, depending on the timing and sequencing of construction of the light-water reactors slated to be built in North Korea. Many of the details regarding the logistics of the canning operation were worked out during the most recent experts meetings in Pyongyang.

Canning the North Korean fuel will serve several objectives:

- First, it will limit fuel corrosion and prevent radioactive materials from dissolving in the basin;
- Second, it will lay the groundwork for strengthening international safeguards of the spent fuel by packing it so that the International Atomic Energy Agency can verify, tag and seal the cans; and
- Third, it will enable the material to be shipped out of North Korea, according to the terms of the agreement.

III. Financing of DOE Spent Fuel Responsibilities

It is essential to minimize the costs to the taxpayers of implementing this agreement. At the same time, it is equally important that we also state as clearly as possible what we know of the possible range of costs associated with the Department's spent fuel implementation responsibilities in North Korea.

The water treatment and fuel canning costs have been very carefully estimated by companies with directly applicable experience and checked by DOE contract personnel. But we cannot eliminate the unknowns that stem from working with as unfamiliar a counter-part as North Korea, in an isolated environment.

Much of the costs of travel and meetings associated with the denuclearization of the Korean Peninsula have historically been absorbed in the Department of Energy's nonproliferation and nuclear energy budgets. This fiscal year, an additional $200,000 from FY 1995 funds budgeted for regional arms control and nonproliferation activities have been spent to address implementation of DOE spent fuel activities pursuant to the Agreed Framework. These activities include addressing the ongoing corrosion of the fuel rods at Nyongbyon. Specifically, these activities are: measurement of water properties, installation of an underwater viewing system to monitor the condition of the fuel, and designing the water treatment system. Additional funding will be required before any actual water treatment can commence.

The total funding required for water treatment in 1995 is expected to be about $1.4 million (which includes $200,000 discussed immediately above). The cost of canning all of the spent fuel is expected to be $6.3 million. Costs for: consulting with BNFL, a British nuclear service company, and COGEMA, a French nuclear service company; project supervision; translation; and travel for DOE personnel and technical experts from the National Laboratories and other organizations during the spent fuel activities will cost approximately $2.5 million in FY 1995. Accordingly, the Department has requested of the Congress that $10 million be reprogrammed to allow the Department to implement its spent fuel responsibilities at the earliest possible date. Prompt approval of these funds is crucial if we are to build on the progress established in our first visits to North Korea.

If funding to start the water treatment and fuel canning is delayed, or if there are unexpected delays in our access, costs could increase because the water in the basin will have become more contaminated and the water treatment system will have to deal with larger quantities of highly radioactive fission products and transuranic actinides dispersed into,the water. In addition, a delay in starting the canning may increase North Korean apprehension that their fuel has degraded to the point where their ability to handle it is compromised. Prompt performance on arresting the corrosion of the fuel and placing it into safe storage is essential if the spirit of cooperation which was evident during the site visits in November and January is to continue.

It is important to note that we will be relying on the North Koreans to transport our equipment from the port of entry to the site and to provide some of the labor that will be required during fuel canning. We will need the cooperation of the North Koreans in providing access to the site, lodging near the site, local transportation, communications, emergency medical treatment, and other basic services we take for granted in the U.S. The most recent visit of our experts to North Korea reached agreement on the details of the logistical understandings that will govern our contractors' work there, pending approval by our respective governments.

It is anticipated that all activities related to putting the North Korean spent fuel into safe, secure storage will be completed using contracts funded in FY 1995.

Once the fuel is safely stored in the cans under safeguards by the International Atomic Energy Agency (IAEA), the level of effort for the Department will decline dramatically. The Agreed Framework calls for the IAEA to monitor the freeze and to perform routine and ad hoc inspections as required to assure that the freeze is maintained. More specifically, the IAEA will have representatives at the site safeguarding the fuel. However, there will be a low level of activity required by the U.S. to assure that the temporary storage is safe.

Potential activities to be concluded after FY 1995 include:

- Site visits to verify that the fuel storage cans are not leaking.
- Maintaining basin clarity so that the water remains clear enough to safeguard the fuel.
- Maintaining the temperature of the fuel storage basin water within operating limits, providing as necessary, heat in Winter and cooling in Summer .
- Dealing with any fuel can leakage and associated unloading and recanning.

To assure that such activities can proceed on an as-needed basis, the best available estimates at this time suggest that funding of approximately $1 million per year will be required during the estimated 4 to 7 year period starting in FY 1996 during which the fuel will remain in temporary storage in North Korea.

In sum, the Framework Agreement is in the U.S. interest, and North Korea's interest. Cooperation on the spent fuel provides a solid basis for both parties to begin the work together in implementing the Agreement.

U.S. Department of Energy
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BIOGRAPHY

CHARLES B. CURTIS

Charles Curtis was nominated by President Clinton and confirmed by the United States Senate as the Under Secretary, U. S. Department of Energy, in February 1994. As Under Secretary, Mr. Curtis' responsibilities include management of programs on science and technology, national security, environmental cleanup, nuclear energy and radioactive waste.

Prior to his current position, Mr. Curtis was a senior partner in the Washington law firm of Van Ness, Feldman & Curtis, practicing administrative law in a wide variety of energy and financial matters.

In 1977, President Carter appointed Mr. Curtis as Chairman of the Federal Power Commission and later that year the first Chairman of the Federal Energy Regulatory Commission -- a capacity he served in until 1981.

Mr. Curtis has also previously held positions with the Office of the Comptroller of the Currency, the Department of the Treasury, and the Securities and Exchange Commission. From 1971-76, he was Chief Counsel to the Energy and Commerce Committee in the U.S. House of Representatives, with principal responsibility for energy, consumer protection, and securities matters.

Mr. Curtis received his B.S. and B.A. degrees from the University of Massachusetts-Amherst in 1962. He received an LL.B. with honors from Boston University School of Law in 1965, where he also served as Editor of the Boston University Law Review.

Mr. Curtis was born in Pennsylvania in 1940. He is married to the former Rochelle Elaine Bates. The couple reside in Bethesda, Maryland, and they have one child.

January 1995

FUNDING AND ROLE OF DEPARTMENT OF ENERGY

Mr. MYERS. Mr. Bevill.

Mr. BEVILL. Why should the Department of Energy pay for the treatment of the North Korean spent fuel?

Mr. CURTIS. Well, we are not—let me back up Mr. Chairman.

There are three or four steps in this. The first is that we need to treat the pool in order to clean it and stabilize its chemistry. Then we need to can the spent fuel rods. Eventually, these rods will need to be transported out of the country and disposed of in some way.

What we are paying for, or proposing to pay for with your permission, is the treatment of the pool, to stabilize it so the rods do not further corrode. Remember, they are not made for long-term storage. That is to take away from North Korea the health, safety and environmental excuse for reprocessing—similarly, with respect to the canning of the fuel.

Now, time urgency really suggested that the U.S., and the U.S. alone, volunteer under the Agreed Framework to assume those expenses, roughly about $10.2 million all together, rather than attempt through an international collaboration to gain other nations' contribution to it.

The third and fourth phase of this, transportation out of the country and disposition, are much more expensive activities; and there will be an attempt to assign those responsibilities to the Korean Energy Development Organization and provide for international cost-sharing of those responsibilities.

INTERNATIONAL COST-SHARING

Mr. BEVILL. How many countries would participate in the international cost-sharing?

Mr. CURTIS. We don't know, sir, yet. We do know the Republic of South Korea has indicated that it intends to play a central role in the financing and providing of the light water reactors and associated Korean Energy Development Organization activities, and the Government of Japan has indicated that it will make a significant contribution to this activity.

But, at present, those are the commitments in principle that have been received, from those two governments; and what is being negotiated now is to put flesh on those agreements of principle and put them into concrete dollars, in answer to your question. So I have to reserve to say, we do not have an answer to that question at the present time.

There will be an attempt to very much broaden the international participation. There are two reasons for that. That not only brings more money to the table but it also provides a broader international commitment and weight to this agreement, which will help influence North Korea's conduct as well.

Let me add one footnote, and that is the broader international community participation and support for this agreement, the more assured we are that if North Korea does not carry out its obligations that we can impose the disciplines through the international community that are required.

TIMEFRAME FOR USE OF FUNDS

Mr. BEVILL. Over what period of time will this $10.2 million last, in your judgment?

Mr. CURTIS. We believe—it is designed to be concluded within the calendar year. We hope to be able to clean and stabilize the pool and can the 8,000 rods by October if everything goes according to our best schedule.

We are dealing with an uncertain partner here, to say the least, and so we don't know. But that is our best schedule now.

There will be some follow-on monitoring activities then that could carry over into 1996, but we would estimate those to be less than—around $500,000 or less, and therefore our 1996 budget will address that.

TRANSPORTATION COSTS AND ISSUES

Mr. BEVILL. Is that when we get into the transportation costs that you mentioned?

Mr. CURTIS. No, sir, the transportation is first of all, under the Agreed Framework; the transportation of the fuel out of North Korea is going to begin at such time as the nuclear components are first shipped, for the first light water reactor. So that is some four or five years down the road.

Importantly, before that event happens, we will have full-scope compliance with International Atomic Energy Agency safeguards, [deleted].

So it is four or five years down the road before the fuel is transported out of the country, and of course, it would be some time after that before the fuel is disposed of.

Those again are expenses that we expect will be undertaken by the Korean Energy Development Organization that is being formed over the next several months.

Mr. BEVILL. Thank you.

Thank you, Mr. Chairman.

Mr. MYERS. Mr. Livingston, Chairman Livingston.

ROLE OF DEPARTMENT OF ENERGY

Mr. LIVINGSTON. Thank you, Mr. Chairman.

Mr. Rogers and I were chatting, trying to follow a procedure, and I apologize for being a few minutes late. If I understand, I want to commend you on what progress we have here; but as I understand it, you plan to take those rods out and clean them up somehow and put them in temporary storage, but leave them in North Korea for four or five years.

Mr. CURTIS. We will can the rods in the pool and then take the rods out and evacuate the water with an inert gas, is the current plan as I understand it. The reason I made that change is, if you were to try and take the rods out of the pool without canning them in the pool, the exposure to the atmosphere would be a very dangerous situation.

Mr. LIVINGSTON. So they are in the can, which you will relocate, but leave within North Korea?

Mr. CURTIS. Yes, sir, but once in the can, they can be left there for a substantial period of time, number one; and number two, they will be sealed and IAEA safeguarded in their canisters.

Mr. LIVINGSTON. Will IAEA have constant access to know that they are not being tampered with?

Mr. CURTIS. Yes, sir.

DISPOSITION OF FUEL RODS

Mr. LIVINGSTON. One of the big problems in this country is what to do with our spent fuel rods, and I think DOE has undergone a great deal of consternation about exactly that problem. Whether it is in the next few months or few years, eventually we are going to face that same problem with respect to these in North Korea.

Where are we going to put them?

Mr. CURTIS. That is not yet determined.

[Deleted].

We have no intention and have not agreed to bring this fuel back into the United States. It is my personal view that that is a most unlikely result. I think it will be reprocessed rather than stored, but I do not think it likely that this will come back into the United States.

Mr. LIVINGSTON. So presumably it would be sold or given to a country with the capability of reprocessing other rods, and they would use it as fuel for future activity?

REPROCESSING FEE

Mr. CURTIS. There is an additional cost here, sir, that whoever gets it for reprocessing, they will insist on a reprocessing fee. This is expensive. So that is a cost yet to be determined, but will be resolved by KEDO.

Mr. MYERS. Who will pay for that, that reprocessing, whether done by the United States or by France or Great Britain?

Mr. CURTIS. We believe that will be an expense taken up by the Korean Energy Development Organization. How the cost responsibility is allocated is yet to be determined.

Mr. MYERS. But it is not part of the Treaty at this time?

Mr. CURTIS. That is correct, yes, sir.

Mr. MYERS. Mr. Rogers.

Mr. CURTIS. I should say, "the Agreed Framework." I have to be careful about using the word "treaty, " as you know.

Mr. MYERS. I will get into that later.

CONDITION OF FUEL RODS IN NORTH KOREA

Mr. ROGERS. My understanding, to further clarify this, these rods I gather are deteriorating rather rapidly in water storage?

Mr. CURTIS. They are. How rapidly we do not yet know.

Mr. ROGERS. Do you feel like you must do something reasonably soon before it becomes too late to get in there and do this?

Mr. CURTIS. If they deteriorate more, if they release more radionuclides into the pool therefore, there would be a greater radiation handling risk associated with this activity; plus if the rods deteriorate very badly, our ability to put them into cans becomes problematic and could greatly add to the cost of this operation.

If it deteriorates, we lose the capacity to reconstruct what happened in the 5 megawatt reactor when they were in the reactor load.

[Deleted].

Mr. ROGERS. Did they respond to your request for information about that, the North Koreans?

Mr. CURTIS. They have not. They have not responded to the request, no.

Mr. ROGERS. Why?

Mr. MYERS. Pardon me.

Haven't they responded in a negative way, that it is none of our business?

Mr. CURTIS. I don't know that there has been that type of precision in the exchange.

Mr. ROGERS. Some of the folks are here; perhaps they could help you with this.

Mr. CURTIS. I don't believe these folks—like Bob Alvarez—can. Our role has been to examine the spent fuel, the pool and the technical problem of putting the rods into canisters.

Mr. ROGERS. Surely you asked them, how much have you spirited away from the site before we caught you with it.

Mr. CURTIS. I think that is a fair question. As I said to the Chairman in my opening statement, I did not participate in the negotiations, so I am not the best evidence for this committee on some of the questions.

Mr. ROGERS. Who has the best evidence on this? We need to know that.

Mr. CURTIS. You would need to talk to the State Department, sir.

Mr. ROGERS. Do you know from hearsay what the conversation was? I am not asking for an eye witness here.

SATISFACTION OF INTERNATIONAL ATOMIC ENERGY AGENCY

Mr. CURTIS. I do not.

I do know this. There has been a great deal of controversy as to will the IAEA satisfy itself with respect to the type of inquiry that it may need to do to resolve the question as to whether North Korea had earlier separated out any plutonium from the spent fuel. Under this Agreed Framework, the IAEA needs to be satisfied with respect to that question before the first nuclear component is shipped.

The Agreed Framework so provides, but that may be four to five years down the road, and that is where the dispute has occurred in the public arena.

Mr. ROGERS. Are you saying that under the agreement that we reached with North Korea, it will be at least four to five years before they will be required, if ever, to tell us or tell IAEA how much spent fuel they have already spirited from the scene?

Mr. CURTIS. It will be——

Mr. ROGERS. Am I correct in that?

Mr. CURTIS. I don't know as it is a question of whether they will tell them. IAEA can insist on such investigations or other activities to satisfy itself with respect to that question in that time frame.

Mr. ROGERS. North Korea has four or five years before they would be required to answer that question; is that correct?

Mr. CURTIS. Before they are required to satisfy IAEA to that extent, yes, sir. The reason I am drawing that line is, it doesn't matter what they say. It matters that IAEA can actually investigate and satisfy itself.

This agreement provides that IAEA must be fully satisfied before any nuclear component is shipped. In the interim, North Korea agrees to shut down the entire nuclear program that it has in place and subject it to IAEA safeguards. It has shut it down. IAEA safeguards are in place with respect to the 50 megawatt reactor, the 200 megawatt reactor, the 5 megawatt reactor, the fuel fabrication and the reprocessing facility, all frozen, shut down, and subject to safeguards.

NORTH KOREAN REPROCESSING FACILITY

Mr. ROGERS. So the reprocessing facility from which fuel may have been taken, that reprocessing plant is in IAEA's view now?

Mr. CURTIS. It is sealed and subject to their safeguards.

Mr. ROGERS. So if they took spent fuel away before we got there, they cannot reprocess that to weapons grade plutonium, at least in that particular reprocessing plant?

Mr. CURTIS. No.

[Deleted].

DETAILS OF AGREED FRAMEWORK

Mr. CURTIS. Let me explain how the agreement works.

As I have said, the agreement requires North Korea to freeze all activities and subject those facilities to IAEA safeguards. Then there is to be a fuel shipment of heavy oil, 50,000 tons in 1994, which has already been delivered—100,000 in 1995, and then 500,000 per year for the remainder of the agreement—until the light water reactors are in place. There are supposed to be two light water reactors supplied, and when the first light water reactor is substantially under construction; but before the first key nuclear components are shipped—and by that I mean the reactor vessel itself or any sensitive nuclear material—there must be full satisfaction of the IAEA investigation into what occurred in the past. That is how the agreement sets up.

I hope that is clear. The agreement is pretty complicated.

Mr. ROGERS. Are they buying this material from us? Are we furnishing it free as part of the agreement?

Mr. CURTIS. First of all, the agreement calls for a supply contract to be developed in the first six months of the agreement. That is April 21. So the supply contract terms have not yet been stated, but it is expected that the supply contract will provide the reactors to North Korea under terms in which there may be barter or other payback terms yet to be negotiated. But I think the fair thing to say is the cost is going to have to be borne by KEDO.

KOREAN ENERGY DEVELOPMENT ORGANIZATION

Mr. ROGERS. What is KEDO?

Mr. CURTIS. The Korean Energy Development Organization; that is to be the organization under the Agreed Framework, to supply the two reactors. They are going to have to put the money up. We are not counting on North Korea to pay for it, if that is the question.

DETAILS OF AGREED FRAMEWORK

Mr. ROGERS. So North Korea gets out of this deal, an agreement to shut down their present facilities and agree to a lockdown, I guess, of those, and inspection by the international community constantly?

Mr. CURTIS. Right.

Mr. ROGERS. They get new modern equipment and supplies with which to generate, I assume, the same amount of electricity; is that generally correct?

Mr. CURTIS. Probably much more electricity.

Mr. ROGERS. Out of which they could not make nuclear weapons with the spend fuel?

Mr. CURTIS. I don't think so, but I have lost my antecedent.

The light water reactors to be supplied under this agreement are civilian light water reactors of the character that we have in the United States, okay? Their spent fuel will provide a buildup of plutonium which, if reprocessed, could provide plutonium suitable for weapons.

NORTH KOREAN REPROCESSING CAPABILITY

Mr. ROGERS. What is to prevent them from reprocessing the new material that we are providing?

Mr. CURTIS. Well, number one, I think—it is why I provided this chart—one has to keep in mind the temporal character of this agreement. If nothing had happened and the North Koreans had continued their program unabated, even if they complied with the Nonproliferation Treaty and kept the material under safeguards, they would have been able by the year 2000 to produce and separate enough plutonium through their reprocessing facility the operation of between 60 and 100 nuclear weapons by the year 2000. That is three years before the first reactor under this agreement is going to be delivered and operational. So that is an important difference.

We know that North Korea is an erratic and isolated nation. Under this agreement, we are buying time for, hopefully, the temporizing influences of international relationship to help North Korea come into the family of nations. They may never get there.

If they don't get there, if they violate the agreement, this whole thing stops.

[Deleted].

SAFETY AND TIMING ISSUES

Mr. ROGERS. You said a moment ago that the material that is under storage now was not meant to be stored under water for any great length of time——

Mr. CURTIS. Yes, sir.

Mr. ROGERS [continuing]. And is deteriorating. How long would it be before it would be dangerous or fatal for a human being to try to can or contain?

Mr. CURTIS. There are certain risks associated with handling this fuel right now. But our consultants and experts who have been on the scene believe that those risks are containable, if I can use that phrase, and that they could manage it. They will can these rods under water in the pool, and they will not lift them out of the water. If they were to do that, they would have a very serious problem.

Mr. ROGERS. How long before it would be impossible even to can them in the water?

Mr. CURTIS. We don't know the state of the fuel. For example, there may be 200 or 300 rods that have been damaged when they were removed from the core, that were in that pool. A damaged rod may run the risk of a breached cladding and it may be deteriorating much more rapidly than an undamaged rod.

We can't answer the question how much time we have. Prudence would suggest sooner rather than later.

Mr. MYERS. Mr. Knollenberg.

Mr. KNOLLENBERG. Thank you, Mr. Chairman. I will follow up a bit with a question relative to Mr. Rogers. He got through some that I had questions about, too.

My question maybe should be reserved for the State Department, but it seems to me—and I am one of those that—many of us have the view that built within this agreement were a series of future draft choices. It seems to me that North Korea got all the present goodies in this, and we were to pick ours up later. I may be phrasing this improperly.

Did you say that—in terms of delivering on the nuclear reactor, that won't be until when, until the year——

Mr. CURTIS. We can't put an actual year on it now because the supply agreement is in negotiation; 2000 and beyond.

BENEFITS TO UNITED STATES

Mr. KNOLLENBERG. So that is a safeguard for us?

Mr. CURTIS. The real safeguard is that we have the program frozen and under IAEA safeguards in the interim, and by freezing, we prevent separation of plutonium that they otherwise could have gone ahead with.

The idea of separated plutonium in these quantities in the hands of North Korea is a very worrisome thing. That that has been arrested through the remainder of this decade is a very, very important reduction of the threat on that peninsula.

Mr. KNOLLENBERG. I know in your testimony I believe Secretary Perry said that if North Korea reneges on its obligations at some point, and that might be soon, or whenever, the IAEA monitoring process will quickly detect that violation, and we will be no worse off when that happens than we were in July of 1994, which is when this started; and if I recall, that wasn't a very pleasant confrontation we had. You are saying we might revisit that same scenario immediately; in fact, it will be triggered on the spot?

Mr. CURTIS. Yes. I think General Luck also testified that there are no plans to reduce the high level of force in South Korea that was built up over the last year, that will remain in readiness; and if we go back to a more serious confrontation with North Korea, that we will have a much stronger position in the international community as a consequence of having taken these steps to try and avoid that confrontation by gaining broader international commitment to this Agreed Framework. That is why I think Secretary Perry has said that we will be no worse off; in fact, we will be in a better posture because for each year the agreement remains in place, we have prevented a separation of plutonium in North Korea.

[Deleted].

Mr. KNOLLENBERG. Thank you very much.

Mr. MYERS. Mr. Riggs.

INTERNATIONAL COST-SHARING

Mr. RIGGS. Thank you, Mr. Chairman.

Mr. Secretary, I am curious to know—obviously we are trying to be proactive in a sense and contain costs, but are any other countries going to participate in the cost of the water treatment?

Mr. CURTIS. Not in the water treatment, nor in the canning of the rods. That cost, which we estimate will be about $10.2 million, is a cost the United States has assumed because of the urgency of the situation.

Mr. RIGGS. So we are going it alone?

Mr. CURTIS. Yes, sir.

FUNDING SOURCE FOR INTERNATIONAL ATOMIC ENERGY AGENCY

Mr. RIGGS. For my benefit, since I am new to the committee, I would like to know what is the principal funding source for the IAEA and how are those costs apportioned?

Mr. CURTIS. For the activities of the International Atomic Energy Agency in Vienna, their funds are provided by contributions of participant nations.

Mr. Luongo can respond.

Mr. LUONGO. I believe that the State Department provides $30 million a year in direct contributions, and then the DOE provides on the order of $10 million a year in in-kind contributions to IAEA.

Mr. RIGGS. By "in-kind" are you talking about——

Mr. LUONGO. People primarily, expertise and experts to assist them.

Mr. RIGGS. So you have no budget outlays for IAEA?

Mr. LUONGO. Not direct cash, no.

Mr. MYERS. Mr. Frelinghuysen.

INSPECTIONS OF NORTH KOREAN FACILITIES

Mr. FRELINGHUYSEN. Who has inspected what? Has the DOE done some of the these inspections?

Mr. CURTIS. Yes, sir; and Mr. Alvarez, who led our team on both site visits, is here, and if the committee wants——

Mr. FRELINGHUYSEN. I ask that question because some of the press reports said, for instance, that the North Koreans had been preventing international inspections of their nuclear waste sites.

Mr. CURTIS. Yes. I can clarify that. Mr. Ames was also on the first visit.

Mr. FRELINGHUYSEN. They are either preventing inspections or they aren't.

Mr. CURTIS. This is a pretty complicated mosaic. Let me try and lay it out.

North Korea has these known facilities, a 5 megawatt research reactor, that is shut down and under full IAEA safeguards as we speak.

Mr. FRELINGHUYSEN. That has been actually inspected?

Mr. CURTIS. Yes, sir, a reprocessing facility—they call it a radiological laboratory—that is sealed and subject to IAEA safeguards as we speak, physically present.

A fuel fabrication facility, that is shut down subject to IAEA safeguards as we speak.

A 50 megawatt reactor, also subject to IAEA safeguards, physically inspected; and a 200 megawatt reactor, shut down—its construction is shut down; it was never in operation, nor was the 50 ever in operation, construction was arrested; it is subject to inspection and safeguards. [Deleted.]

Mr. RIGGS. What is the time framework for that?

Mr. CURTIS. That is to occur before the first shipment, which we anticipate would be four or five years out. In the interim, we have the whole program frozen, shut down and subject to safeguards.

Mr. FRELINGHUYSEN. Thank you, Mr. Chairman.

DETAILS OF AGREED FRAMEWORK

Mr. MYERS. Thank you, Mr. Secretary. We have gotten to an Accord. None of us seem to know exactly what agreement was entered into and the responsibilities of various other countries to help us fulfill those Accords. The goal of neutralizing North Korea and taking these weapon systems out of the inventory is what we all desire, but are we actually doing that? That concerns all of us.

Chairman Bevill and I, a year ago, were in Brussels, and the IAEA representatives came up there and briefed us and gave us pictures of what they found, one of which was the reactor, the 5 megawatt reactor, and the pictures of heat disappearing into a mountain adjacent to it. That is the time, I think, we got into conflict. IAEA did because we wanted to ask what was happening in that mountain; and that is when the investigators were ordered out of the country.

Until recently, we just—I don't think they were able to get back into the country except sometime after the October agreement. I think it was not too long ago that they came back in; is that correct?

Mr. CURTIS. Yes, sir.

Mr. MYERS. What is the title you give the people who investigate?

Mr. CURTIS. Inspectors.

[Deleted.]

Mr. MYERS. Would you tell us what facilities you looked at in North Korea?

UNITED STATES ACCESS TO NORTH KOREAN FACILITIES

Mr. ALVAREZ. The facilities that we had direct access to were the 5 megawatt reactor and the spent fuel basin, from which the 8,000 rods were discharged, that you see before you. Those were the facilities that we had direct access to.

The first picture on the immediate right was taken in November of last year, and this year we came back with our technical team and now are having direct access to the spent fuel rods and have been able now to take photographs of the rods.

We also have videotapes and have been taking measurements of the radioactivity in the pool to give us some idea of the degree of corrosion and what steps need to be taken to clarify the pool, stabilize the chemistry and be able to place the fuel in canisters. The spent fuel facility is right next to the reactor.

[Deleted.]

ESTIMATES OF NORTH KOREAN SITUATION

Mr. MYERS. Now, the estimated—here again it bothers me, in your written statement you said things like "we believe to contain." There are so many indefinites here. If a country wants to cooperate and have us help them, it seems to me there should be verification on both sides. Several times in your statements, it says "believed to contain."

"We estimate 8,000 rods, 200 or 300 of which have been damaged in removal from the reactor," that concerns me. We don't know how many at this point. Were you able to count the rods?

Mr. ALVAREZ. We are in the position now of counting all the rods that are there. We will have to take radiation measurements of the rods, as well, in order for us to design the necessary safety features to protect workers in the canning operation. That information coincidentally also provides enough basis by which to calculate the plutonium output.

Mr. CURTIS. When I use—when I said "we believe to contain," as you will hear from Secretary Perry as well, we believe it to contain 30 kilograms of plutonium because how much plutonium is in the rods depends on how long the rods were in the reactor and also the design of that reactor and what is called the "flux" of the reactor. That determines the plutonium buildup in the rods, so all we can do is estimate at this point.

Mr. MYERS. That worries me. In settling an estate, one of the first things we did was make an inventory. We couldn't settle an estate or be accurate as far as taxes or distribution of assets; we had to make an inventory.

It seems like both countries would want to cooperate. If they are serious about cooperating with the rest of the free world about eliminating this threat, they would be willing to say, here is what we have; you can look at it.

We are not criticizing you. You are caught in the middle, and we feel we are, too.

Mr. CURTIS. I appreciate the difficulty. I think why we are so anxious to get these rods canned and the pool stabilized and cleaned is, we can answer a number of questions that we have about this spent fuel eventually, and we need to get that pool stabilized and the rods in cans so that the evidence does not erode away from us as these fuel rods deteriorate.

REMOVAL OF SPENT FUEL FROM NORTH KOREA

Mr. MYERS. There was an article in The Post this morning about what happens to the rods, and why we don't want them to come to this country. In a lawsuit, the Federal court decided they don't want them in North Carolina, but it seems to be of advantage to us to get the things out of there as quickly as we can.

NATURE OF MATERIAL AND TECHNOLOGY IN NORTH KOREA

Mr. ROGERS. Would you yield?

How do you know that those are fuel rods and not pretzel sticks?

Mr. ALVAREZ. Sir, on the basis of radiation measurements that have been taken of the water, that there is clear evidence that this is highly radioactive material that could not be synthetically fabricated.

Having gone to the site, the one thing that I was struck with, not having any understanding of their program, is frankly how primitive it is. We are looking at a program that is an early-1950s-era-type nuclear operation [deleted].

Mr. CURTIS. Also, if I may add, our technicians will be on site throughout the whole process of cleaning and canning. We will be able to verify that those are actual spent fuel rods.

BENEFIT TO NORTH KOREA FROM AGREED FRAMEWORK

Mr. ROGERS. Finally, what is North Korea getting out of this deal? They are shutting down their entire operation for four or five years before they ever get a replacement reactor from us to replace that electricity.

What are they getting out of this deal?

Mr. MYERS. Fuel.

Mr. CURTIS. I think the Chairman is certainly right. It is awkward to be put in a position of saying why this is a good deal to North Korea, but they get out of it certainly a reduced tension in the Korean Peninsula, and in the international communities, that was at a confrontation level.

They, as the Chairman indicated, they have a fuel supply that has been introduced to substitute for the power output that was expected to come from these nuclear facilities, and they will eventually get 2,000 megawatts of light water reactors. That produces a lot of power.

You are talking about a country that has a total current productive capacity of 7,300 megawatts. So it is a big increment to their power supply. That is valuable to them; and what we get out of it is to shut down a very dangerous and destabilizing nuclear weapons program.

Mr. MYERS. I don't think Mr. Rogers was here. Presently, we have already shipped 50,000 tons of fuel oil to them to replace the reactor they have shut down already. This year we will have 100,000 tons, and it goes up to 500,000 tons per year until they get the reactor on line. Did they ever get generation capacity—do they have any?

Mr. CURTIS. They have not. [Deleted].

Mr. MYERS. That is the point.

STATUS OF NORTH KOREAN REACTORS UNDER CONSTRUCTION

You described two facilities you examined. What about the 50, construction of the 50 megawatt reactor that is pretty much completed, and what is the progress on the 200 megawatt reactor?

Mr. ALVAREZ. We did not have access to either site. The International Atomic Energy Agency has had access to both sites and has been implementing a verifiable freeze on the construction at those two sites.

[Deleted].

Mr. MYERS. Do we have anyone from DOE there on the ground? It is all IAEA?

Mr. CURTIS. With respect to the 50 and 200?

Mr. ALVAREZ. It is our expectation, if we can get on with the task of clarifying the pool and placing the fuel into canisters for safeguarding purposes to prevent corrosion, to have during the course of the work activity, U.S. personnel there on a full-time basis for a period of roughly six to eight months.

Mr. MYERS. So we really don't know—do you have any knowledge about the 50 megawatt reactor, how far along it is in progress, how soon it could have been on line?

Mr. CURTIS. Yes. Let me emphasize, I don't think anyone lacks confidence about the International Atomic Energy Agency inspectors that are on the ground, even though we don't have U.S. people there.

Mr. MYERS. I am not questioning that.

[Deleted].

NORTH KOREAN OPENNESS

Mr. MYERS. The thing that disturbs me is the fact that they seem to be less than open with us for some reason. This baffles some of us—I think we all want to accomplish this—such as the pool condition.

Mr. CURTIS. You mean North Korea?

Mr. MYERS. Yes.

Mr. CURTIS. We are trying to be as open as we can.

Mr. MYERS. I said they, North Korea. The pool condition didn't happen overnight, and why are they resistant now to letting us go ahead?

Mr. ALVAREZ. In truth, they have been very cooperative with us in terms of giving us access to the pool, to take samples. We have taken samples of the water to ascertain the chemical and radiological makeup. It is radioactive, and gives us some ideas of what we are going to need to do to design a pool cleaning system, so to speak.

They have been very straightforward in terms of specific questions about the nature of their operation. They have provided us blueprints, they have let us take photos and they are going to allow us continued access for a period of several months to that particular source of material.

SPEED OF DEPARTMENT OF ENERGY'S IMPLEMENTATION

Mr. MYERS. If this reprogramming is approved, how soon would you start to clean up the pool and how long would it take? I think you said five or six months.

Mr. ALVAREZ. What we are doing now is an unprecedented venture, and barring unforeseen events, we expect to have the pool cleaning program under way and designed and up and running by April or May this year; and we also expect to have the canning operation up and running by May of this year and the canning completed, hopefully, by the end of October, end of November this year.

Mr. MYERS. Everything in this fiscal year?

Mr. CURTIS. Yes, sir.

POSSIBLE PROBLEMS AND ASSOCIATED COSTS

Mr. MYERS. What happens if you get the pool cleaned up, which may be a hot potato for them, and then they say, like we did, IAEA, get out, we are going to start operating our reactors again. We haven't got anything to fall back on.

Mr. CURTIS. Secretary Perry said we are no worse off than we were before this Agreed Framework.

Mr. MYERS. $10 or $12 million worth plus all the fuel oil.

Mr. CURTIS. Stabilization and cleaning of the pool was about $1.4 million. Sure, we would have spent some money to avoid a—to gain the possibility of shutting down, terminating a very dangerous nuclear weapons program. In the interim, we will have purchased the freezing of that program and that alone is very important.

If we get the pool stabilized, your hypothetical, that alone will arrest the deterioration of the fuel, buys us time and takes away some of the weight of North Korea's claim that they have to reprocess the fuel in order to avoid a health and safety problem. So just getting the pool stabilized is an important step to buy time and take an excuse away from North Korea for reprocessing the fuel.

REMOVAL OF SPENT FUEL FROM NORTH KOREA

Mr. MYERS. If we can, we could get it out of there, so they don't have access for other purposes. Why don't we want to get it out? Don't we have an advantage to getting it out?

Mr. CURTIS. Absolutely. If we could take it out in October, we would.

Mr. MYERS. If we get it canned, why not?

Mr. CURTIS. Because this is part of an agreement which they have permitted. Under the agreement, in addition to freezing, they have agreed to permit us to can the fuel and agreed to permit us to take it out of the country, but that is tied to supplying the light water reactors. We can take it out of the country when we have made what is under the agreement.

[Deleted].

For example, their agreement that we could take the fuel out of the country, we can say they have agreed that we can take the fuel out of the country.

[Deleted] we can take it out of the country. This is State Department methodology, Mr. Chairman.

FINANCING FOR LIGHT WATER REACTORS

Mr. MYERS. My last question is, in the final analysis, they expect to have two reactors up and going sometime in the next 10 years. No one has agreed, at this point in writing anyway, to accept the financing of these two reactors.

What happens with South Korea and Japan, which are the principal players, as we read about it in the media anyway?

Mr. CURTIS. Those discussions are under active consideration as we speak. There is a call for—under the agreement, a requirement for a so-called "supply agreement" by the 21st of April and that will lay out the terms of how the light water reactors will be supplied, and in parallel with that, our intensive efforts to try and bring definition to the cost responsibility and activities under this agreement.

This is going to be difficult to do because—let me go back to say the Republic of Korea, South Korea, as we know it—the Republic of Korea has indicated its intention to play a central role in financing and supplying of this—of the light water reactors. North Korea and South Korea find it very difficult to even talk to each other. So as we all know, this is going to be a tug and pull.

I think it is going to be awhile before this is settled out in terms of exactly who bears what portion of the cost in supplying these light water reactors. All we can say is, South Korea has signed up for a central role and Japan has signed up to make a significant contribution. We are talking to many nations in the region and throughout the world to try and broaden the international participation in this agreement.

DISPOSITION OF SPENT FUEL IN NORTH KOREA

Mr. MYERS. Returning back one again to the canned rods, disposition of those, has there been discussion that we might take those, once canned, to get them outside of North Korea?

Mr. CURTIS. [Deleted] there is nothing that would allow me to report any resolution of that. [Deleted.]

Mr. MYERS. Mr. Chapman.

Mr. CHAPMAN. Mr. Chairman, I appreciate the opportunity to hear the testimony. I have read the testimony of the witness. I don't believe I have any questions at this time. I yield if there are other questions.

Mr. FRELINGHUYSEN. [Deleted.] Thank you.

Thanks, Mr. Chairman.

CLOSING REMARKS

Mr. MYERS. Thanks to each of you for participating today. Please treat what you have heard as classified. We appreciate the candor; it is something we appreciate. We do have to treat all the responses here as confidential until we know better.

Mr. CURTIS. This is unclassified, if you wish to use it.

[The information follows:]

UNCLASSIFIED

North Korea's Plutonium Production Capability

Based upon North Korean declarations on power rating and configuration as cited in public sources, it is possible to approximate cumulative plutonium production (in kilograms) for each of the reactors at Yongbyon (5MWe and 50MWe) and Taechon (200MWe) if the agreement with North Korea to freeze its nuclear program had not occurred. The calculations below include the 8,000 spent fuel rods removed in 1994 from the 5MWe reactor and which are covered under the Agreed Framework signed by North Korea October 21, 1994.

	Yongbyon Reactors Plutonium Production			Taechon Reactor Plutonium Production	
Year	**5MWe**	**50MWe**	**Potential Number of Weapons from 5 & 50MWe****	**200MWe**	**Potential Number of Weapons, Including 200MWe****
1994	30 kg		5		5
1995	37 kg		6		6
1996	44 kg	50 kg	15		15
1997	48 kg	75 kg	20		20
1998	55 kg	125 kg	30	150 kg	55
1999	59 kg	150 kg	34	300 kg	84
2000	66 kg	200 kg	44	450 kg	119
*					
*					
2005	94 kg	375 kg	78	1,200 kg	278

Calculations are based on foreign countries' experience with similar plutonium production reactors. In the chart, annual plutonium production for the 5MWe and the 50MWe alternates between four and seven kilograms and 25 and 50 kilograms respectively because biannual refueling halts reactor operations for a period of several months.

Although North Korea has declared that the Taechon reactor is for power, it could produce approximately 150 kg of weapons-grade plutonium per year. If power is the primary function, only 10 percent of the fuel channels would be available for weapons-grade plutonium production. This would provide a capability approximately equal to the 5MWe reactor or about 94 kg of plutonium or 15 nuclear weapons by 2005.

* To use a recent source, for example, see David Albright's article in the *Bulletin of the Atomic Scientist* (October-November 1994)
**Assumes 6kg/weapon; operating reactors at 75% annual capacity; and 1,000 MWdays/mt of fuel.

United States Department of Energy
for the House Committee on Appropriations
Subcommittee on Energy and Water Development

February 2, 1995

UNCLASSIFIED

Mr. MYERS. You can have it then and hang it in your kid's bedroom.

Mr. CURTIS. I know there is a lot of difficulty and uncertainty here, and I very much appreciate the courtesy that the committee has accorded to me in trying to answer these very difficult questions.

Mr. MYERS. Thank you very much for participating today and giving us some help to answer the questions that we possibly are going to have to answer.

Thank you very much for giving us the time.

The committee stands adjourned until further call of the Chair.

THURSDAY, MARCH 16, 1995.

POWER MARKETING ADMINISTRATIONS

WITNESSES

ROBERT R. NORDHAUS, GENERAL COUNSEL

MICHAEL DEIHL, ADMINISTRATOR, ALASKA POWER ADMINISTRATION

RANDALL HARDY, ADMINISTRATOR, BONNEVILLE POWER ADMINISTRATION

LEON JOUROLMON, ACTING ADMINISTRATOR, SOUTHEASTERN POWER ADMINISTRATION

FORREST REEVES, ACTING ADMINISTRATOR, SOUTHWESTERN POWER ADMINISTRATION

J.M. SHAFER, ADMINISTRATOR, WESTERN AREA POWER ADMINISTRATION

OPENING REMARKS

Mr. KNOLLENBERG. The meeting will come to order. Gentlemen, be seated. We will make an introduction here to make sure that everybody gets properly identified. Mr. Deihl, to my right, Mr. Hardy, Mr. Nordhaus—I may slay this name; I apologize in advance—Mr. Jourolmon, Mr. Reeves, and Mr. Shafer.

Mr. Nordhaus, it says by my agenda here, you are going to lead off. I would just suggest, if we could—not that this is Friday afternoon, it is Thursday; but there is a vote pending, and we have a plane or two to catch and that kind of thing—so if we could kindly limit each person to about three or four minutes, could we do that?

And if you would, as the starter, begin then, Mr. Nordhaus, we will turn it to you and move down the line. As I have it, Mr. Deihl will speak second, Mr. Hardy, Mr. Jourolmon and so forth.

The floor is yours.

PRIVATIZATION OF POWER MARKETING ADMINISTRATION

Mr. NORDHAUS. Mr. Chairman, I am Robert Nordhaus, I am the General Counsel of the Department of Energy, and what I would like to do, very briefly, is to give you an overview of the longer-term picture from the administration's point of view, and that is its proposals to transfer four of the five Federal power marketing administrations into non-Federal hands—the "privatization" program.

Our proposal is to sell the Alaska Power Administration in fiscal year 1996, Southeastern Power Administration in fiscal year 1997, and the Southwestern Power Administration and the Western Area Power Administration in fiscal year 1998. The administration does not propose to privatize the Bonneville Power Administration. Rather, it will be converted into a government-owned corporation so that it can be operated more effectively.

I would like to mention briefly a couple of aspects of the proposal, and then I would be happy to respond to any questions.

First, the privatization proposals entail a couple of key features, the first of which is that the administration would propose to sell the three PMAs—let me go back.

The Alaska Power Administration arrangements are ones that have been proposed now for several years, and would entail sale of two projects which comprise that administration to the existing customers which take power from the projects.

With respect to Southeastern, Southwestern, and Western, the proposal is to provide the existing firm customers of these power marketing administrations a preferential right of purchase at a price which would be based on the net present value of the current outstanding debt of each administration to the Treasury. We think that the net result of this approach would be to permit the three power marketing administrations to be transferred out of Federal hands in circumstances that would not result in rate increases for the ultimate customers of those power administrations. It would also permit the Treasury to receive the net present value of the Federal debt many years before the money would otherwise come in.

We also think that it would provide an opportunity for much more efficient operation of these power marketing administrations if they were operated as utilities rather than as Federal agencies.

That concludes my statement, and I would be happy to respond to questions in due course.

Mr. KNOLLENBERG. Thank you, Mr. Nordhaus.

[The prepared statement of Mr. Nordhaus appears at the end of the hearing record:]

ALASKA POWER ADMINISTRATION

Mr. KNOLLENBERG. We will proceed to ask questions at the conclusion of each of the commentaries from each of you, so according to my thinking here, Mr. Deihl, Michael Deihl, Administrator of the Alaska Power Administration, you are up next, so the floor is yours.

Mr. DEIHL. Thank you, Mr. Chairman. I appreciate this opportunity to appear before your committee today. I am pleased to report that the Alaska Power Administration's gross revenues for fiscal year 1994 were $10.2 million. These revenues allowed us to pay $2.2 million against the project principal owed to the Treasury. This was 5.7 percent above our forecasted payment targets. The total paid against the Federal APA debt now stands at 20.5 percent.

For fiscal year 1996, we have requested full funding to continue operations, maintenance and power marketing activities. Our appropriations request is 34 percent less than last year, mainly due to the large 1995 increase authorized for the Eklutna generator rewind program. Our total program, including net billing, is 40 percent below last year.

The Eklutna rewind program is progressing as planned. We anticipate awarding the contract during the fourth quarter of 1995, and the work should be completed in 1997.

This past year did challenge APA with a landslide situation on the Snettisham transmission line that seriously threatened our ability to deliver power to our customers. Without the Snettisham transmission line in service, the local utilities would have been required to burn diesel fuel to meet the area electrical demands. Working in partnership with the Alaska Electric Light and Power Company, our customer, we were successful in relocating the threatened tower out of the danger zone. I would like to give a special thanks to this committee for their continuing support of our net billing authority that was utilized to finance this work under these emergency conditions.

During the past 12 months we successfully negotiated long-term contracts for the Eklutna project and a surplus power sales agreement for the Snettisham project. This is the first time since the completion of the Crater Lake unit that 100 percent of the Alaska Power Administration's power is allocated.

We have continued efforts to reinvent APA. We have eliminated additional layers of supervision, reduced numbers of National Performance Review targeted positions, we have eliminated many in-house no-value reporting requirements and supported the APA divestiture initiative. House Bill 1122 was recently introduced by Congressman Young, as well as the Senate Bill 395 that was introduced by Senator Murkowski. Both of these bills authorize the APA divestiture. We are very supportive of this initiative. The Department's bill has cleared interagency clearance, and we will forward this on to Congress in the next couple of days and no longer than one week from today.

Mr. Chairman, that completes my testimony. Again, thank you for your support and I will be glad to answer any questions.

Mr. KNOLLENBERG. Thank you, Mr. Deihl.

[The prepared statement of Mr. Deihl appears at the end of the hearing record.]

BONNEVILLE POWER ADMINISTRATION

Mr. KNOLLENBERG. Next with us is the nonprivatized PMA, I believe.

Mr. HARDY. Yes, this is the lone nonprivatized PMA, although that will probably be subject to some debate, as well, later in this Congress.

Mr. Chairman, my name is Randy Hardy; I am the Administrator of the Bonneville Power Administration. For those of you who are new to the committee, Bonneville is the largest PMA. We serve roughly 50 percent of all electricity needs in the Pacific Northwest. We own 80 percent of the transmission grid in the Northwest, and we have annual revenues of roughly $2.2, $2.3 billion.

Bonneville today is facing the greatest challenge in its 58-year history. We are entering a fiercely competitive marketplace brought on by a combination of low gas prices, a West Coast-wide surplus, and the effective implementation of the Energy Policy Act that Congress passed in 1992 with its opening up of transmission access.

We have competitors today. Our wholesale rate is 27 mils, and we have numerous competitors, both investor-owned utilities, brokers, marketers like ENRON and individual independent power producers offering five-year contracts—and in some cases, longer—

that start below our current rate and escalate by modest amounts per year. That is presenting us with an enormous challenge.

We are trying to meet that challenge in a number of ways. First and foremost, we are cutting our budget. You will notice the difference between our last year's budget and this year's budget is an average cut of almost $250 million per year. Two weeks ago we concluded that wasn't enough, and all of our senior managers essentially huddled together and concluded we had to cut another $250 million on average per year over the next five years if we were to keep our rates competitive.

Embodied in those kinds of reductions is a thousand-person staff reduction for Bonneville; that is a 20 percent staff downsizing. It has not stopped there. I guess with the most recent round of budget cuts, we have identified it will go deeper than that. We are having to respond to the competitive marketplace in much the same way a private company would, even though we are a Federal agency.

The preponderance of the additional budget cuts we have just identified will come in the generation area and, to some extent, in the transmission area. I can get into some more specifics if you desire.

Probably the most significant challenge beyond just the competitive market environment that we are now operating in is Endangered Species Act-related fish costs. These fish costs have gone from $150 million per year in fiscal year 1991 to about $400 million a year in fiscal year 1995 and will go to roughly $500 to $600 million in fiscal year 1998. This kind of cost growth, given the mandates of the Endangered Species Act, is presenting us with an enormous challenge as, at the same time, we deal with these kinds of upward cost pressures.

Despite these kinds of challenges, I am optimistic. We have a very high probability that we will meet our fiscal year 1995 Treasury payment for the twelfth straight year in a row. The combination of having average water for a change—we have had four straight drought years up until this year—a combination of average water and the budget cuts will enable us both to meet the market challenges as well as absorb the additional salmon cost hit and still make our scheduled 1995 Treasury payment of almost a billion dollars.

In 1996, I think we will be in reasonably good shape, as well, but again that depends on future twists and turns on the salmon front as well as water conditions in the Northwest.

I would just like to close by saying that this is a new environment for Bonneville, but we intend to do whatever it takes to meet the market competition; and that is enough discipline for us relative to the kinds of staffing cuts and streamlining that our agency needs.

Thank you, Mr. Chairman.

Mr. KNOLLENBERG. Thank you, Mr. Hardy.

[The prepared statement of Mr. Hardy appears at the end of the hearing record.]

SOUTHEASTERN POWER ADMINISTRATION

Mr. KNOLLENBERG. Mr. Jourolmon with the Southeastern Power Administration, you are next.

Mr. JOUROLMON. Mr. Chairman and Members of the subcommittee, I appreciate the opportunity to present the fiscal year 1996 budget request for Southeastern Power Administration.

An appropriation of $19.8 million is requested to carry out our mission in the Southeast. This request assumes the availability of $10 million of unobligated balances.

Southeastern's revenues for fiscal year 1994 were $156 million and are estimated to be $168 million for fiscal year 1995. We have repaid $468 million of the $1.5 billion invested in plant facilities.

Negotiations with investor-owned utilities reflect a need for Southeastern to schedule the power deliveries to the preference customers. Southeastern, the Corps of Engineers, and the preference customers are studying methods and procedures of scheduling the hour-by-hour delivery of Federal power to power customers.

A major budget problem in the Southeast is acquiring funds at a time when Southeastern's costs are increasing significantly. In addition, the Corps of Engineers is having trouble obtaining funds to improve and rehabilitate the projects. Southeastern is planning in the future to have the preference customers pay the utilities directly for as many services as possible. This means that the increased Southern Companies' costs will be handled by asking the preference customers to pay the Southern Companies directly.

The process could greatly reduce future budget requests. As contracts expire, Southeastern will negotiate new contracts providing for transmission services to be paid directly by the preference customers to the utilities providing the services.

Southeastern also purchases power for pumping operations. In order for the customers to purchase power directly from a utility, we will arrange with a commercial bank or a trust fund, using preference customer funds, to provide funding for the purchase of the pumping power. The account will be replenished from funds supplied by each customer when pumping power is delivered to the preference customers.

In addition, the preference customers may want to up front finance some of these improvements and project rehabilitations that the Corps of Engineers has not funded because of higher priorities. Southeastern is considering operating with a commercial bank or trust fund to hold preference customers funds until the Corps can expend them.

Mr. Chairman, this concludes a summary of Southeastern's budget request. I will be happy to answer any questions.

Mr. KNOLLENBERG. Thank you very much.

[The prepared statement of Mr. Jourolmon appears at the end of the hearing record.]

SOUTHWESTERN POWER ADMINISTRATION

Mr. KNOLLENBERG. Mr. Reeves, who is with the Southwestern Power Administration, the floor is yours, sir.

Mr. REEVES. Thank you, Mr. Chairman. It is a pleasure to appear before the subcommittee and to present the Southwestern Power Administration's fiscal year 1996 budget request.

Our budget this year is focused on a continuing commitment to the mission of marketing and delivering Federal hydroelectric power to municipal electric systems, rural electric cooperatives and defense installations in our six-state marketing area. We continue to control and reduce costs, thereby keeping our rates low and assuring our financial stability.

This year's budget request has again been reduced, and we have further streamlined our organization and reduced our staff. Water conditions continue to be excellent. Fiscal year 1994 was another above-average year in both energy generation and revenue collection. We collected over $109 million, thus exceeding the annual budgeted cost of operating both the Corps of Engineers' and Southwestern's hydropower and transmission facilities by over $50 million.

Our cost control efforts and good water conditions produced over $32 million towards repayment of investment this year and have allowed us to avoid any rate increases on our integrated system for the past four years. We have now paid over $330 million of the $1 billion invested in transmission and hydroelectric facilities in our area. However, increasing operating costs at the Willis and Rayburn projects in Texas caused rate increases of 3.4 and 4.4 percent, respectively, effective last October. The FERC has approved both those rates on a final basis.

Our maintenance and construction programs continue to emphasize preventive and corrective maintenance of the transmission system. The construction program focuses on replacement of deteriorating system components and obsolete equipment to assure reliable power delivery, enhanced overall performance and safety, and long-term cost savings.

Efficient management operations and continued good water conditions have also combined to maintain our reduced request for purchased power funds. We have built up our energy banks to a high enough level, and with this year's good water conditions, we don't expect to purchase any power to meet our contractual obligations the rest of this year or in fiscal year 1996.

Our customers and interconnected utilities are making more demands to upgrade our facilities to allow them to use our system to meet the electrical requirements of the system and the region. Thus, joint planning, an important part of our program and reimbursable funding authority, equally important, allows more efficient use of the region's energy resources at the lowest possible cost.

Demands are also being made on the hydroresources by a significant group of customers other than our firm power customers. We expend a great deal of effort to balance the interests of hydropower recipients with the interests of other water resource users. While the needs or desires of the various interest groups often conflict with the hydropower interests, or even with one another, we try to accommodate the other water resource users through the diversity available from operating our projects as an integrated system. We have been very successful in developing trust among the many interests, and we are widely recognized as having a balanced perspective of the public good.

Finally, we continue to be challenged by the need to assure the reliability of hydropower deliveries. Consequently, we strongly support and encourage an aggressive Corps of Engineers operation and maintenance rehabilitation program.

In summary, Mr. Chairman, I am pleased to report that we are in sound financial condition, and we are proud of our accomplishments and contributions this past year. We appreciate the support of this subcommittee, its staff members and, of course, our customers. I will be glad to answer any questions you might have.

Mr. KNOLLENBERG. Thank you, Mr. Reeves.

[The prepared statement of Mr. Reeves appears at the end of the hearing record.]

WESTERN AREA POWER ADMINISTRATION

Mr. KNOLLENBERG. Finally—and I think this is the second largest, is it not, PMA—Mr. Shafer, if you would, please. This is the Western Area Power Administration.

Mr. SHAFER. Thank you, Mr. Chairman. Mr. Chairman, members of the subcommittee, it is a pleasure for me to be here today and represent Western. As most of you know, Mr. Clagett retired last year after appearing before this committee for 11 straight years, and gave me the opportunity and privilege to slide over one chair and to represent Western.

Our request this year is very straightforward, and in the interests of your time, I am going to quickly just highlight three of the major elements within our program.

First, Mr. Clagett reported to you last year that we began a strategic planning effort because of the rapid changes that were occurring in the utility industry. We did that by beginning to take a systematic look at Western's operations and functions, primarily focusing on cost containment. We immediately experienced some success in those areas and realized savings of $26 million in fiscal year 1994 and 1995. We reduced our employment level by 10 percent and flattened our organization in the process.

We are now beginning what we consider the second phase of that strategic planning effort and, in that, we are taking a radical look at our organizational processes and structures so that we can be more competitive and provide better service to our customers. We are doing that by looking at the work that we have, how we can reduce it, how we can eliminate it or how we might perform it differently. We expect to gain even more efficiencies in that area. We are working very closely with our customers and with our employees as we go through these processes.

WESTERN'S FISCAL YEAR 1996 BUDGET REQUEST

Secondly, I want to talk about our budget. The $319 million total request is actually 5 percent less than what we requested last year. We think that really reflects the success of our cost containment goal. The O&M portion of our request is what we need for day-to-day operation and maintenance of our high voltage transmission system. In that area also, our cost containments allowed us to overcome the costs of inflation, as well as the higher labor costs, and to request 2 percent less than we did last year in our O&M budget.

The construction and rehabilitation request contains no new starts. It does emphasize the replacement of obsolete equipment that is no longer supported by the manufacturers, and equipment and facilities that have reached their life expectancy. The request is $66.5 million, which is actually $26 million less than requested last year. The big difference is due to the completion of two major transmission projects, the Mead-Adelanto and the Mead-Phoenix high voltage transmission lines. Which, incidentally, we really appreciate the support this committee provided for those projects, because it will enhance our transmission capacity in that part of the country so that we can make more efficient use of the resources in that area, as well as enhance economic transactions through that area.

In the area of purchase power and wheeling, we continue to look at ways that we can use alternative forms of financing, so that we don't have to come in and request appropriated funds in that area. As you know—and I am very much aware that you know—our needs in this area are defined primarily by the water conditions of the system and the reservoirs that fuel our generators. Although we had a significant hydro recovery in 1993, we projected additional recovery in 1994, but those projections didn't come about, and we actually decreased about 4 percent. We hope to recover in 1995. If we have normal inflows, which we project, then we hope to recover approximately about 2 percent this year.

ANNUAL REPAYMENT

Thirdly, in spite of the fact that we had those less-than-desirable water conditions and the fact that we have suffered impacts from the operational constraints that have been placed upon us by the competing uses such as recreational and environmental interests, we were able to deposit into the Treasury, after we paid our annual expenses and our interest, about $41 million. So we consider ourselves to be on very sound financial footing to meet our repayment obligations, as well as balancing that with our commitment and responsibility of providing the power to our customers at the lowest possible cost.

In conclusion, I, too, appreciate very much the opportunity of being here and working with you and your staff and with our customers and our competent employees at Western Area Power Administration. Our successes really depend very much on this committee and the relationship we have with our customers.

That concludes my report. I will answer any questions you might have.

Mr. KNOLLENBERG. Thank you very much, Mr. Shafer.

[The prepared statement of Mr. Shafer appears at the end of the hearing record.]

Mr. KNOLLENBERG. Thanks to each of you. I particularly appreciate and I am sure the Members appreciate your being concise in your reporting.

As you know, you heard the bell, we are going to have a vote pending, but before we get to that, I am going to yield to Mr. Bevill, a long-time member of this committee, who has some questions, and then you will see us change chairs here.

But, Mr. Bevill, you are on.

RATE INCREASE

Mr. BEVILL. Thank you, Mr. Chairman.

Mr. Nordhaus, in recent testimony before this committee Secretary of Energy O'Leary testified that the ratepayers would be protected as to the possible increase of rates. Any agreement to sell the PMAs would include protection against any significant rate increases. I asked her what "significant" meant, and she said not an increase—it would not be an increase by more than 5 percent. How would you do that?

Mr. NORDHAUS. Well——

Mr. BEVILL. In the rates.

Mr. NORDHAUS. Yes, let me go back a step, and explain. Assuming we get authorization from Congress to permit us to enter into negotiations to do the studies and enter into negotiations with potential purchasers to purchase the systems, what we contemplate is that we would aim to enter into arrangements which would set the purchase price at a level that was at least the same level as the net present value of the current debt owed to the Treasury by the PMA. It is our view, which we are going to have to test out through some specific studies, that a purchase price at that level combined with the operating efficiencies that could occur by transferring the PMAs out of Federal ownership should be sufficient to avoid any rate increases as a result of privatization. That would be our objective, but we are not going to be able to give the committee or the customers specific assurances on that, until we know what the outcome of the studies will be.

Mr. BEVILL. Well, then actually at this point you don't know yet how you would protect the ratepayers from abuse as far as rate increases are concerned?

Mr. NORDHAUS. I have to say that because of restrictions on our ability to do the detailed staff work necessary to give you that assurance which are contained in, I believe, the 1986 legislation, we are not able to provide the backup that we would have to tell you whether this would be the case or not. But our objective is to work out arrangements that will make this possible.

PREFERENTIAL RIGHT OF PURCHASE

Mr. BEVILL. In your statement, you mention that any privatization proposal would include giving a preferential right of purchase to the existing firm power customers of the PMAs. What exactly is meant by a preferential right of purchase?

In other words, will the Department attempt to negotiate a sale with existing firm power customers before offering the PMA assets to others, or would the department assist the highest and best bid for the assets and then allow the firm power customers to match this offer?

Mr. NORDHAUS. What we intend to do, and I think it is laid out in the testimony in general terms, is to first determine what the target price we are seeking is, which will be based on the net present value of the current debt held by the Treasury with respect to that PMA; and then give the firm customers of that PMA a preferential right to purchase the assets and the output of the facility and perhaps the power production facilities from that PMA. So first, we set the price and then give the current customers a right to purchase the PMA at that price.

SOUTHEASTERN POWER ADMINISTRATION ASSETS

Mr. BEVILL. All right. Mr. Jourolmon, what are the assets of SEPA that would interest a potential buyer?

Mr. JOUROLMON. The unpaid investment——

Mr. BEVILL. What do you have that would interest a potential buyer?

Mr. JOUROLMON. We have the right to power, which is what the Administration is proposing to sell, and our unpaid balance on that at this moment is $1.008 billion.

Mr. BEVILL. You are not likely to be crowded with offers, are you?

On average, what percentage of customers' power needs does SEPA provide?

Mr. JOUROLMON. We have a range between 1 and 50 percent, but probably, on average, about 20 percent of the power of our customers that we provide.

Mr. BEVILL. Does SEPA-generated power provide any customer or municipality with 100 percent of their energy needs?

Mr. JOUROLMON. No, sir, we do not provide 100 percent of any of our customers' needs.

Mr. BEVILL. In the Alliance Report cited earlier, it is claimed that rural electric co-ops and municipality-owned utilities pay the PMAs one to two cents per kilowatt hour, which they sell for four to nine cents per kilowatt hour. Is this accurate in regards to SEPA?

Mr. JOUROLMON. Yes, those are correct numbers. It is sort of misleading, however, because the amount that the preference customers are charging is a melded-in rate of several different sources, including purchasing power from the investor-owned utilities and including other generation costs, including distribution costs and transmission costs. But when you put all of the costs together, the not-for-profit utilities in the Southeast could pay as much as nine cents or 90 mils.

Mr. BEVILL. Mr. Chairman, I think my time is up. I have some other questions I will put in the record here. Thank you.

Mr. KNOLLENBERG. Thank you, Mr. Bevill. You are certainly free to extend your questioning to another question or two if you like.

Mr. BEVILL. They are giving me the signal. I have got five minutes. You are not going to miss it, are you?

Mr. KNOLLENBERG. No, I am not going to miss it. Thank you, Mr. Bevill.

We are at a point where there are five minutes. I am going to wait about 30 seconds, and if a replacement doesn't show, I am going to call a recess momentarily while I go vote; and I will return. In fact, that might be the wise thing to do, because I am only so fast. With that, let's call a recess—when the first Member returns—Mr. Bunn should return—they should be able to step in, so we will keep this continuity flowing. So with that, we will stop until he gets here. Thank you.

[Recess.]

FISH AND WILDLIFE RECOVERIES

Mr. BUNN [presiding]. Mr. Hardy, I would like to follow up a little bit on some things. I understand that to help mitigate the costs of the fish recovery, the administration is allowing you to use the 4(h)10(C) provision. Enacting this law allows you to shift about $60 million of the cost off of the ratepayers.

Would you explain how this works for us, please?

Mr. HARDY. Surely, Mr. Chairman. Section 4(h)10(C) refers to a particular section of the Northwest Power Act. When that Act was passed in 1980, it obligated Bonneville to undertake a variety of fish and wildlife mitigation activities on the Columbia and Snake Rivers pursuant to a plan drawn up by the Northwest Power Planning Council. The Act essentially said that we should allocate the costs of those fish and wildlife expenditures in accordance with project purposes.

Each of the projects, as is typical with all of the PMAs, by virtue of their authorizing legislation, has different purposes and different percentages of the projects that go for those purposes. On average, in the Columbia system, 73 percent of the project purpose is for power, 27 percent of the project purposes are for other uses—navigation, irrigation, recreation, and flood control.

For a variety of reasons, in the last 15 years we have paid 100 percent of all the Council programs' fish and wildlife costs and we have in essence cross-subsidized other river users. Given the market competition that I described earlier, we can no longer afford to raise rates to cover those costs. In recognition of that and in recognition of the rather extraordinary escalation in Endangered Species Act costs that we are experiencing, the Administration sought to help mitigate the effect of that on Northwest ratepayers and allowed us to take the full amount of that credit prospectively for the next two years, which amounts to about $60 million. That, in essence, eliminates a cross-subsidy, as I pointed out before, that we have been providing to other river users.

I would also point out that that is $60 million in fiscal year 1995 out of a total salmon expenditure cost at the Bonneville of about $400 million, so it is about 15 percent of our total overall costs.

Mr. BUNN. Since the ratepayers have been subsidizing, for a number of years now, the overall plan, is there any opportunity for ratepayers to recover the past subsidies?

Mr. HARDY. I would say that is somewhat problematic. The discussions we had within the Administration did not focus on looking at the so-called retroactive 4(h)10(C) credits for a variety of procedural and precedential reasons—that was really not on the table. Whether that at some point is recoverable, I think is an open question. We are, however, very appreciative of the administration's initiative to at least be able to claim the full amount of the 4(h)10(C) credits for the next two years and a substantial portion of that in perpetuity.

TREASURY PAYMENT

Mr. BUNN. Have you ever missed a Treasury payment, and if so, when was it and what was the reason behind it?

Mr. HARDY. We have made 11 straight Treasury payments in a row. We did, however, miss several Treasury payments in the late 1970s and early 1980s. While that was somewhat before my time, I think the perception is that we had a series of bad water years on one hand, and we frankly did not sufficiently raise rates on the other hand to cover those costs. That led to a pledge by one of my predecessors, Peter Johnson, back in the early 1980s, to put that as probably the highest priority that Bonneville has. Since that time, we have made every Treasury payment in the 11 succeeding years.

Mr. BUNN. I noticed that the reserve level for fiscal year 1995 could be as low as $87.1 million. Does that include the increased costs expected if the NMFS plan is implemented; and if it is, do you expect to be able to make your next Treasury payment?

Mr. HARDY. Yes, we do expect to be able to make our fiscal year 1995 Treasury payment. Actually, the $87 million figure was the end of fiscal year 1994 review. Our first review at the end of the first quarter of fiscal year 1995, shows a somewhat better picture; $170 million is what we now project for a reserve level at the end of fiscal year 1995. That incorporates not all, but a substantial portion of the additional fish costs that we will experience in 1995. The 4(h)10(C) credits, combined with almost average water for the first time in four years, gives us a very high confidence, in the 90 percent range, that we will be able to make our fiscal year 1995 Treasury payment in full and on time.

DEBT REFINANCING

Mr. BUNN. Currently, there are two bills pending in the House of which I am a cosponsor and one in the Senate currently being sponsored by Senator Hatfield, which would refinance the debt of Bonneville, the purpose being to refinance at a higher interest rate to avoid the appearance that Bonneville is receiving a subsidy from the Federal Government.

How do you expect the refinancing to affect ratepayers and do you feel that it is the proper thing to do at this time?

Mr. HARDY. I do think it is the proper thing to do because it eliminates this subsidy perception that we have been dealing with. If you refinance all your outstanding debt at market interest rates, by definition, I don't think anyone can call you "subsidized" any longer; so we are going to nail that one. And I guess what I would say is, even though that has about a 0.5 percent rate impact, it is about $15 million a year for the first five years. Even in these budget-constrained times and market-constrained times, just to get rid of this political subsidy argument, that is a cost well worth paying.

ENERGY COMPETITIVENESS

Mr. BUNN. It is my understanding that you are no longer enjoying any price advantage over other forms of energy in the region.

What do you see now as your major impediment to becoming competitive?

Mr. HARDY. I think some of the major impediments that we have to being competitive, one, is obviously the escalating fish costs and how to deal with that in some way. That was the subject of a rather extensive hearing in the Senate yesterday.

I would say, secondly, the administration has indicated support for us introducing a bill to make us a wholly owned government corporation, like Tennessee Valley Authority or Amtrak. That, too, would allow us significant additional efficiencies beyond the ones that I have pointed to function more like a business. I think that, plus the debt buyout legislation that you just referred to, would all be significant assistance in helping us be more competitive.

Mr. BUNN. When you and I had visited earlier—and I missed a part of your testimony, so I am not sure if you covered it this morning—but could you expand on your plan to offer a secured five-year rate to your customers and what has made that a necessity?

Mr. HARDY. We have two problems in dealing with this new competitive situation, in conjunction with the prospect of significant additional salmon costs. One is the absolute rate level, that is, how are you going to absorb the additional $160 million per year of salmon costs in the next three to four years. Equally important to our customers is the lack of any long-term rate certainty.

I have got PacifiCorp, Washington Water Power, competing investor-owned utilities, and ENRON, in there offering my customers five-year deals that start below my current rate and escalate by 2 or 3 or 4 percent per year. To a customer, when he sees a guaranteed five-year offer that starts below Bonneville's current rate, much less any rate increase, that gives him absolute predictability when I am facing open-ended salmon costs and other kinds of things, that looks real attractive.

The five-year rate is designed to deal with that price certainty question by giving our customers five years worth of certainty so we can retain market share. Ultimately that works to the advantage, I think, of the Federal taxpayer, as well. If we lose market share, then you start to get into a situation where the Treasury payment does get called into jeopardy.

We are highly motivated to avoid that happening. That is what the five-year rate is designed to avoid.

Mr. BUNN. Thank you.

Mr. Fazio.

Mr. FAZIO. Thank you, Mr. Chairman.

Randy, I think I will have to give you a break. You have been working out here enough.

Mr. HARDY. Thank you, sir.

Mr. FAZIO. I must say I have heard of people paying for goodwill, but paying for the cost of perception is something that I think is rather unprecedented, but maybe we are there.

Mr. HARDY. Perception is reality in this business.

CUP WATER CONDITION

Mr. FAZIO. That is what one of my favorite friends in politics always says. I think maybe we have crossed over here.

I wanted to talk to Mr. Shafer about a couple of things. First, before we talk about the future, could you tell us how the recent storms out in California have impacted WAPA's investments out there? How are the reservoirs doing? Is there any room left for flood control?

Mr. SHAFER. Not very much. Unfortunately, some people's curses are other people's blessings. In this case, it has helped us recoup considerably in that area.

We had, as you very well know, a drought going out there. This certainly did break it. All of our reservoirs are either at or above 100 percent except for New Melones, and it is up considerably. We anticipated it would have taken six years to fill New Melones, and now we don't think it will take that long. So it definitely has been a plus for us, and in fact, it is going to impact the amount of funds that we are going to require for our purchased power, and we are in the process of analyzing that and working with the Department.

We will work with this committee on determining what that level would be. We won't need as much out there as we thought.

Mr. FAZIO. A good water year?

Mr. SHAFER. A good water year out there.

Mr. FAZIO. Unlike the bad water years we have been having. The bottom line is, now you are ready for the second-guessers on how you manage this reservoir because we have all this snow pack up there coming down at some rate of speed. How much do we manage for flood control versus endangered species and power and all the other things that we are supposed to balance? Good luck in terms of dealing with your public perception problem, because no matter what you do, it will be second-guessed by a whole bunch of people.

Mr. SHAFER. Yes.

SHASTA TEMPERATURE CONTROL DEVICE

Mr. FAZIO. Could you, for the record and perhaps just off the top, just give us the status of the Shasta Dam temperature control device, which is a major issue, as you know, in dealing with the fish problems on the Sacramento River?

Mr. SHAFER. Yes, Congressman, I will be glad to do that.

We are very pleased to hear that that has gone forward and understand that the Bureau of Reclamation awarded a contract last November. The cost impacts of the bypasses on that in this past year was about $7 million. We see, in the next year, it being close to $11 million, so we are really anxious to get that installed; and we understand, like I say, that contract has been awarded and that the Bureau has committed to rearranging their priorities if they have to to make sure the funding is available for that.

SALE OF POWER MARKETING ADMINISTRATIONS

Mr. FAZIO. I am sure that WAPA is doing all it can to bring this about. It is a very important project for all the entities involved. I appreciate your attention to that.

Well, let's go to the question of possible sale of the PMAs.

Mr. Nordhaus, you probably can help me more on this than anyone else, although Mr. Shafer may want to comment. My constituents are reacting in a variety of ways to this proposal. Some of them are adamantly against it. They don't think the sale is a good idea; they don't want to talk about it. They think all we do is encourage you if we even engage in dialogue.

I think there is another group that opposes it, but thinks it is inevitable and decided pretty much without a lot of delay to get involved in trying to put together some proposals that might be acceptable. Others are rather enthusiastic and are trying to move ahead on joint powers authorities and other things that might put them in position to compete with some of the stockholder-owned utilities and others who might have naturally indicated an interest. They are hiring investment consultants, and there is a real effort here to put something on the table and to participate in meaningful ways.

What I would like to do is to explore some of the options that I think remain potentially on the table and see what your reaction is. First, do you think it is possible to see something less than a sale approach here? For example, there might be a lease arrangement with title remaining with the Federal Government while the entities, parts of WAPA form joint powers agreements or some other management device that would finance perhaps, handle functions, in effect, run the entity while they may not actually hold title. Something less than a sale but a transfer of responsibility?

Does that make hearts sing at the Department of Energy?

Mr. NORDHAUS. What we have looked at are a number of different options. I think our ultimate objectives are twofold. First to transfer the ownership or control of the PMAs to non-Federal hands and, secondly, to get some up-front cash. And we are—

Mr. FAZIO. You want the prepayment of the debt, in other words. Would that be a precursor to any further consideration?

Mr. NORDHAUS. I would say that the Office of Management and Budget is quite focused on the cash.

Mr. FAZIO. I have noticed that myself.

Mr. NORDHAUS. That has gotten our attention also.

But really there are two objectives here. One is the up-front cash in an amount at least equal to the net present value of the Federal debt. The other is to transfer the ownership or control of these entities from the Federal Government to a non-Federal entity and one of——

Mr. FAZIO. You said "or," you didn't say "and."

Mr. NORDHAUS. I said "or."

Mr. FAZIO. As a lawyer, I take that seriously.

Mr. NORDHAUS. One of the options we would certainly consider is in lieu of a sale a lease or operating——

Mr. FAZIO. You would consider that? That is not off the table?

Mr. NORDHAUS. It is not off the table, sir.

Mr. FAZIO. It is my understanding that the administration's position at the moment would be to give first right of refusal to the entities who would consider themselves existing customers.

Is there anything—you know, as long as the price they were willing to pay was equal to present value as you indicated a minute ago, is that an important value in the way the administration looks at this? Could you clarify your policy as regards to the existing customers?

Mr. NORDHAUS. Both, in our testimony and communications with a number of the outside groups who are interested in this, we have indicated that the administration's policy will be to first set the price, and it will be a price at least equal to the net present value of the current Federal debt. Secondly, to give the current firm power customers, that is those preference customers and a few non-preference customers who have firm power purchase rights, a preferential right of purchase at that price.

If they don't take it at that price, then we would consider other buyers.

Mr. FAZIO. Is that a rationale that is similar to the rationale that Congress used when we dealt with the FERC licensees in the 1986 Electric Consumers Protection Act when we gave some credence to the argument that the ratepayers had made a number of investments and, frankly, needed to be held harmless when the question of renewing these licenses came up for decision? Do you think there is a precedent there that you have built on?

Mr. NORDHAUS. I think that similar policy considerations guided us as those which guided the Congress back then. They are somewhat different situations, comparing on one hand licensed projects which are owned by the licensee utilities to a Federal project which the Federal Government owns but which has long-term sales arrangements which in effect have the customers, through payments for the power, repaying the Federal debt on the projects. But I think that the underlying concern is that these are long-standing arrangements. The utilities who take the power have built their systems around these arrangements to receive the Federal power and it is our view that the current customers ought to have first shot at purchasing the systems.

Mr. FAZIO. We need to protect the ratepayer, then, from the potential cost of those entities going out into the market and trying to find replacement power at potentially higher cost; is that the premise?

Mr. NORDHAUS. Yes. There is a rate shock concern and also an operational concern.

SALE OF THE WESTERN AREA POWER ADMINISTRATION

Mr. FAZIO. I would like to talk a bit about WAPA since that is directly my area of concern and responsibility. It is obviously, as probably everyone who has looked at this map can see, an agency with large multistate systems. I am wondering how you would want to proceed on something as large as, frankly, any of these marketing agencies but in terms of looking at it in systematic terms where you can almost make individual units add up to an administration.

How would you see the divestiture occurring?

Mr. NORDHAUS. In the case of WAPA where we have a number of different river basins and a number of different projects, we would contemplate proceeding on a project or river basin basis rather than on a system-wide basis.

Mr. FAZIO. No system-wide sale would be contemplated for WAPA?

Mr. NORDHAUS. That does not seem feasible and it is not our objective at this point.

Mr. FAZIO. Parenthetically, is it for any of the others?

Mr. NORDHAUS. It is conceivable to me that perhaps for Southeastern. But I think the current financing and power sales arrangements for the power marketing administrations are broken out in segments smaller than the entire power marketing administration, so I think probably the most feasible way of transferring these institutions into non-Federal ownership would be on a project or river basin basis rather than on a PMA-wide basis.

POWER MARKETING ADMINISTRATIONS SALE PRICE

Mr. FAZIO. Just for information, if you could tell us, how did we come up with the number in the budget submission? Is this just simply a price of all of the administrations in terms of their present debt value amalgamated; is that how it came to be?

Mr. NORDHAUS. If you will turn to the table on page 2 of my testimony, what you will see is in the left-hand column of numbers, the estimated sales price. This is an estimated sales price for each of the PMAs or each of the three PMAs other than Alaska, where there is already a set price based on a transaction that was entered into some years ago, but for SEPA, SWPA, and WAPA. Those are estimates of the net present value of the outstanding Federal debt for each of the PMAs on a system-wide basis.

We have been, since the budget went up, trying to get more accurate numbers on the net present value. We have those now. Obviously they depend on what your assumption is as to both rate of repayment and discount rate. At a seven-and-a-half percent discount rate, our current, we come out about the same as what you see here on this table.

Mr. FAZIO. We get there differently but we get to the same number.

Mr. NORDHAUS. It is about the same.

Mr. FAZIO. It sounds like managing two objectives here.

Mr. NORDHAUS. No. No. I think the original estimates were pretty close and they did a very conscientious job. If interest rates change, obviously, these numbers will change to reflect differing discount rates, but this was relatively accurate.

Mr. FAZIO. Okay. Have you started negotiating with any specific entities? Are there any sales agreements or whatever else we might call these ultimately?

Mr. NORDHAUS. No, we have not. We have had inquiries from various would-be buyers and other interested parties wondering how we are going to go about it. What we have explained is that before we do anything serious about negotiation, we need authority to do the necessary staff work and authority actually to negotiate the sale, which we don't believe we have right now. And one of the things we will be asking for in legislation—which will come up in the next couple of weeks—is authority to come up with privatization plans for each of the PMAs or for pieces of the PMAs which will then be submitted to the President and to the Congress.

SALE AUTHORIZATION

Mr. FAZIO. You will be going the authorizing route. You are not expecting this committee to take action in that regard, are you?

Mr. NORDHAUS. My view would be that from a legal sufficiency point of view the authorizing legislation is the principal thing we need.

Mr. FAZIO. I don't think that this committee could get hung up on legal sufficiency, but we might agree with you politically. Maybe we could reach common ground.

Mr. NORDHAUS. I chose my words carefully.

Mr. FAZIO. I was afraid you had.

Mr. NORDHAUS. From a legal sufficiency point of view, we can do it through authorization legislation and I don't know what this committee's interest is in participating in the legislative effort in this regard. It may be that you would like to participate. It may be that you just as soon not.

Mr. FAZIO. I don't know the answer either, Mr. Nordhaus. We will probably get to find out.

Mr. NORDHAUS. That is why I phrased my question carefully.

SALE OF GENERATING FACILITIES

Mr. FAZIO. Let me ask this question of how you might make available the right to the power output of a dam and not necessarily the dam itself, the generators. How do you actually get someone interested in making this kind of an offer or purchase if in fact they may have some remaining questions?

Is this committee still going to have you come talk to us about the need to fund a generator replacement or some upgrade or what have you?

Mr. NORDHAUS. Congressman, one of the long-term objectives of privatization is to make it unnecessary for Congress to appropriate either O&M expenses or capital improvements.

Mr. FAZIO. Make it unnecessary.

Mr. NORDHAUS. Unnecessary to appropriate either O&M or capital improvements for these projects. We are looking at a couple of options, one of which would be to sell powerhouses. We are not considering selling the dams but—

Mr. FAZIO. We would sell the powerhouses but not the dams.

Mr. NORDHAUS. One option would be to either sell the powerhouses or the generation equipment and the associated transformers.

Mr. FAZIO. How would we decide how to operate the facility? We have Randy Hardy talking about his fish price problems. I mean, how many other pressures do we bring to bear and, you know, we haven't an amalgam of interests that somehow at the moment at least have got all one-stop shopping. How do you resolve these questions?

Mr. NORDHAUS. I don't think this is an easy question to answer, but it is one which in the context of the licensed projects that, for instance, many public power systems operate has been worked out over the years where the stream flows. Minimum flow regimes have been worked out where the operator of the facility is subject to State and Federal regulation over a number of aspects of the operation but where the operator is free to use what water is available to run through the turbines. That is sufficient in the licensed project context, to permit the operator to finance the facility. I believe that it is possible to structure these arrangements so that we would be able to create financeable projects, but I think the detail of that has to await our ability to sit down and actually try to work these arrangements out. And this is a difficult regulatory environment. It will have impacts on the financeability of the projects and as a lawyer, I would have to tell you we will have to do considerable work on this and I can't guarantee that we will come out with something that will be financeable. A lot will depend on the circumstance of the particular project and also the allocation of regulatory risks between the buyer and the seller.

CENTRAL VALLEY PROJECT

Mr. FAZIO. I appreciate that answer. That is very candid.

You may be aware that the Central Valley project, Mr. Shafer may also be, is an interest that many potential purchasers have. There are some beneficiaries, current beneficiaries who are interested in a joint powers agreement to purchase the whole project, both the water and the power side coming together. It is very preliminary but it is, you know, I think a fairly reasonable response to what the administration has submitted in terms of its budget request.

Put aside for the minute the question of their ability to finance this and, of course, there are going to be questions there about their ability to get the kind of preference power bonding capacity.

Has the department been in discussions concerning the sale, both proactively and maybe just reactively? Have these people approached you at the moment with an outline of a proposal?

Mr. NORDHAUS. We have gotten occasional visits from a number of entities that have some interest in the power marketing administrations or pieces of them. As I said, we are not in a position to negotiate with anybody and we have told them that. But if we had the authority to do the staff work and undertake negotiations, we would certainly talk to the power customers, for instance, of the Central Valley project.

As I understand, the water customers also have an interest in the project. That presents, a much more complicated problem. One that is beyond, I think, the scope of our department.

Mr. FAZIO. Do you anticipate your legislation would encompass this kind of purchase of both the water and the power side or would it take special legislation?

Mr. NORDHAUS. The legislation we are working on would deal only with power and not with water. I think that an arrangement such as the one you mentioned, would probably require a very specially tailored legislative act. We have not really thought about how this would work.

Mr. FAZIO. Okay.

Would you indicate who the principal point of contact is in the department for all these interested or conceiving of how they might get involved in this? Is there one individual? Is there somebody for preference and somebody for other kinds of potential purchasers? Is there somebody who will deal with water as well as power? Is there somebody?

Mr. NORDHAUS. Deputy Secretary White is the senior official who supervises the power marketing administrations. He has asked me and Dan Adamson on his staff to undertake the work of shaping the legislative proposal and, if that proposal passes, I would assume that he and I will work with the team that would——

Mr. FAZIO. So for now you and the other names you have mentioned would suffice, and then if the authority is granted and the bill is signed into law a new team would be there in addition?

Mr. NORDHAUS. It would be a major effort to put this together.

Mr. FAZIO. I thank you very much.

Mr. Chairman, thank you for giving me the time. This is a very important issue to some of our constituents. Thank you.

Mr. KNOLLENBERG. I recognize that, Mr. Fazio, and you are certainly entitled to that time.

Mr. FAZIO. Thanks very much.

PRIVATIZATION OF BONNEVILLE POWER ADMINISTRATION

Mr. KNOLLENBERG. Thank you, gentlemen. I will conclude with a couple of quick questions myself.

Just looking, there is no magic in this question I guess, but you look at the numbers you have here. You have got five PMAs, the biggest one and it is not just the bigger, it is 10 times bigger than the one that is next in line. I suspect that just because it is bigger is one reason that it is not being privatized but there are probably some other reasons, too. Mr. Nordhaus, would you care to comment on why that one is overlooked in this privatization effort?

Mr. NORDHAUS. I will ask Mr. Hardy to give you some more detail, but just let me give you an overview.

I think there are a couple of reasons. One is that the level of debt that Bonneville has which—and, in particular the debt for the so-called WPPSS debt, the Washington Public Power Supply System debt, which was incurred for three nuclear power plants, two of which were never built which is about——

Mr. HARDY. Seven billion dollars.

Mr. NORDHAUS. Seven billion dollars. The level of debt, the competitive pressure that Bonneville is under because of its relatively high costs and vigorous competitors and its dominant position in the power market in the Northwest, in our judgment, made it not a good candidate for privatization.

In summary, we are not sure anybody would want to buy it but if they did, they would have such a strong market position that it would probably not be in the public interest.

Mr. KNOLLENBERG. It would be a monopoly of a kind?

Mr. NORDHAUS. A big one. Yes. Not your ordinary garden variety monopoly but one which would completely dominate power production and transmission in the Pacific Northwest.

Mr. KNOLLENBERG. I have a question—did you have a comment on that, Mr. Hardy?

Mr. HARDY. I would just say to supplement Mr. Nordhaus' comments perhaps in a little different way, two things are unique. He mentioned the $7 billion worth of WPPSS debt controlled by terms of bond resolutions that established that debt and this was done through a joint action agency in the State. The Federal Government stands behind those projects and the security of those projects cannot be lessened—a potential purchaser has two options: He can either defease the outstanding debt by adding $7 billion to the purchase price, or the Federal Government can retain the $7 billion worth of debt as a continuing liability, which probably makes the deal not a real good deal from the Federal Government's standpoint.

Mr. KNOLLENBERG. And the taxpayer?

Mr. HARDY. The taxpayer and the open-ended kind of fish obligation.

When you add them all up, Congressman, the net present value, under our current repayment stream, and methodology for the Federal Government is worth about $7 billion. There is no way you can realistically value our assets or our earning capability to equal the current net present value of the current repayment stream to the government. I think that is the dilemma we struggled with with OMB in December and concluded this didn't make a lot of sense.

Mr. KNOLLENBERG. I think I concur with the problems. I think I wanted to have them elucidated a little bit.

Let me turn to Mr. Deihl. You have got the overwhelming—this is the baby of the bunch, I believe, is it not?

Mr. DEIHL. I guess that is correct.

ALASKA POWER ADMINISTRATION CLOSEOUT COSTS

Mr. KNOLLENBERG. In terms of smallness. Privatizing has in itself maybe a cost to it and we can discuss that with another question. What is the estimate of the closeout costs, for example, once the sale is authorized by Congress and are these costs included in your 1996, fiscal year 1996 budget?

Mr. DEIHL. I would start by saying there are no closeout costs included with our 1996 appropriations request.

Mr. KNOLLENBERG. None?

Mr. DEIHL. None whatsoever. The estimated closeout costs, we have started looking at that. We don't have final figures on that. We will hopefully here in the near future feel a little more comfortable. We have come up with a range, very broad range right now of about $3.5 million to the neighborhood of $5.5 million for complete closeout.

Mr. KNOLLENBERG. Secondly, a question for you again, Mr. Deihl. How will you ensure that that sales price, for example, provides a fair and adequate return for the investment of the taxpayers?

Mr. DEIHL. There was a very open public process back starting about 1986. There was established negotiated purchase agreements, one for the Snettisham project, which is for the State of Alaska and one with the three current power customers for the Eklutna project.

We feel that the terms of those agreements are a fair and a good balance of all the concerns of all the stakeholders involved, both ratepayers and taxpayers. The Eklutna purchase price returns 100 percent of the net present value of the principal and interest payments the Treasury would receive under the continued Federal ownership plus $1 million, and that is a one-time payment. It is up front.

The Snettisham project is similar. It is based on a net present calculation of principal and interest the Treasury would receive. That is based on—it would be discounted at the State bond rate, plus 2 percent to establish that purchase price.

TIMING OF THE POWER MARKETING ADMINISTRATIONS SALE

Mr. KNOLLENBERG. This question could be directed at all of you and Mr. Nordhaus as chief counsel. Is there a phaseout of government control contemplated in this process? Is it an overnight slam dunk kind of thing or is that part of the architecture of what you are trying to do here yet?

Mr. NORDHAUS. Let me give you an initial answer. First, these proposals for sale would be one in Alaska in 1996, Southeastern in 1997, Southwestern and Western in 1998. So to that extent there is a phaseout.

But I think more importantly the actual transfer of operations of these facilities would probably take place over some period of years, and as the sales were completed, we would try to make transition arrangements, for instance, for the employees so that they to the extent it was feasible to do so, the current Federal employees, if they were needed for operation in the projects that were transferred to non-Federal ownership, would go over with the projects.

There are a number of issues like that that have to be dealt with, but if the thrust of your question is when can you get these projects off the Federal books, our objective would be that the need to make appropriations for them, other than Bonneville, would end in fiscal year 1998.

Mr. KNOLLENBERG. Within a given PMA? Are you speaking generally of all of them as a combination but within a given PMA would there be a phaseout?

Mr. NORDHAUS. I think, again we haven't negotiated—we don't even know if people want to buy all of these pieces of PMAs, how much, how long it will take.

Mr. KNOLLENBERG. Within a given PMA would there be a phaseout?

Mr. NORDHAUS. I would think there would be some phaseout but whether it would require continuing appropriations or not, is a question we haven't really addressed, and probably won't, until we actually sit down and talk about how to do it.

Mr. KNOLLENBERG. All right. Gentlemen of the panel, that concludes my questions. And that concludes all questions, so I would say that we are near at hand to an end. I would just say in closing that your complete written testimony will be entered into the record and I believe there were some requests for questions for the record. I myself may submit a question or two so we would ask unanimous consent that those be—obviously I have to ask myself; I guess I am the only one here—that those be allowed and I agree with myself.

So with that being done, I think that concludes things. I thank you very, very much for coming this afternoon. And we will recess until Tuesday at 10 o'clock. Thank you very much.

[The prepared statements of the Administrators and the questions and answers for the record follow:]

PMA PRIVATIZATION

Mr. Myers. Can you describe the Administration's proposal to privatize the Power Marketing Administrations (PMAs)?

Mr. Nordhaus. The Administration's proposal is to privatize the Alaska, Southeastern, Southwestern and Western Area Power Administrations between 1996 and 1998. A preferential right of purchase will be given to existing PMA firm power customers, meaning that existing PMA customers will be given the first opportunity to purchase PMA assets. The sales price would be based on the discounted net present value of the PMA's financial obligations to the Treasury at the time of the sale. The discount rate would be the Treasury's cost of borrowing money at the time of the sale.

The estimated sales prices for Southeastern, Southwestern, and Western Area Power Administrations are based on an earlier calculation of the net present value of the future repayment that Treasury would receive. The Alaska Power Administration has been included to be consistent with the budget document, but the sale price in that case is based on the previously negotiated sale price with the purchasers, consistent with the net present value concept.

The prices on the table are estimates that must be refined once more details concerning the privatization can be explored through a study. The "Net Revenues Lost" column represents the lost principal and interest payments to the Treasury in the five year (1996-2000) budget scoring window, offset by the reduction to operating outlays.

The "Net Revenue to Treasury" represents the increase in revenue the Treasury would receive in the five year (1996-2000) budget scoring window.

The Administration plans to submit legislation on PMA privatization as soon as possible.

I would like to insert for the record a table summarizing the preliminary estimates of the proceeds from the sale:

(The table follows:)

PMA Privatization
1996-2000
(all $ in millions)

PMA	Date to Privatize	Estimated Sale Price	Net Revenues Lost (1996 - 2000)	Net Revenues To Treasury (1996 - 2000)
APA	end of FY 1996	$ 85	($ 27)	$ 58
SEPA	end of FY 1997	909	(431)	478
SWPA	end of FY 1998	612	(136)	476
WAPA	end of FY 1998	2,863	(194)	2,669
Total		$ 4,469	($ 788)	$ 3,681

TIMING OF PMA PRIVATIZATION LEGISLATION

Mr. Myers. When will the Department submit legislation for this proposal?

Mr. Nordhaus. The Administration's bill to sell the Alaska Power Administration was forwarded to the Congress on April 7, 1995.

For the privatization of Southeastern, Southwestern, and Western Area Power Administrations, the Administration is currently drafting a PMA privatization proposal. It will be forwarded to Congress as soon as possible.

Mr. Myers. Has the Administration considered any immediate alternatives to reduce the need for annual appropriations such as establishing revolving funds for the purchase power expense?

Mr. Nordhaus. The Administration has not been considering immediate alternatives to reduce the need for annual appropriations.

Mr. Myers. How does the Administration propose to maximize the revenues from the sale of these assets?

Mr. Nordhaus. It is not the intent of the Administration to maximize the revenues from the sale of these assets. The Administration proposes to base the selling prices for the PMAs at the discounted net present value of the PMA's financial obligations to Treasury at the time of sale. This will maximize sale revenues to the Treasury within a constraint of not causing electric rate increases.

DOE REGULATIONS SAVINGS

Mr. Myers. What savings would you anticipate for each PMA, both in dollars and numbers of employees, if it were no longer necessary to comply with internal Department of Energy regulations, and each could operate under the same constraints as a nonFederal utility company?

Mr. Nordhaus. I will ask each of the PMAs to respond.

Mr. Deihl. APA estimates there could be savings in our headquarters overhead costs if we were not required to meet all Federal administrative reporting requirements. Additional savings could be realized with freedom from Federal personnel, procurement and budgetary regulations.

APA's current FTE total is 35. A defederalized APA is estimated to require 30 FTEs, operating at a cost of $3.4 million.

Mr. Hardy. Bonneville has been named a reinvention laboratory as part of the Administration's National Performance Review. Under the leadership of Deputy Secretary Bill White, the Department has already provided administrative relief to Bonneville from significant barriers in the areas of personnel, procurement, finance, budget and litigation. While we have not quantified the exact savings to Bonneville and its rate payers from the Department's assistance in Bonneville's reinvention efforts, we have been able to reduce our workload such that we have been able to reduce our work force by about 350 employees from the time we initiated Bonneville's Competitiveness

Project.

Legislation proposed to make Bonneville a wholly-owned government corporation would increase our flexibility in the areas of personnel, procurement, finance, budget and litigation and would make permanent the relief obtained administratively as well as relieve Bonneville from additional administrative burdens which are statutory in nature. Bonneville reinvention will only change how Bonneville goes about its business, it will not change our basic mission in electric energy, energy conservation and fish and wildlife. Bonneville will continue to function as a government agency and thus would not operate under quite the same constraints as a nonFederal utility company. We estimate becoming a government corporation would enable Bonneville to save roughly $30-35 million annually.

Mr. Jourolmon. Because Southeastern Power Administration is a small agency of only 41 FTEs, any savings derived from operating as a nonfederal utility company would be inconsequential. There would be possible savings with the Corps of Engineers.

Mr. Reeves. With Federal regulations and restrictions removed, Southwestern would expect to reduce its budget by 7 to 10 percent and its staffing level, Federal and contractor, by approximately 5 percent. Some of the FTE savings would be expected to be redeployed to perform utility sector functions not now performed. Budget savings would be expected primarily in the procurement area, where excessive regulations and costs drive up the costs of both implementation and performance of contractors.

Mr. Shafer. Western's objective is to operate in a more business-like mode, similar to a private utility. We are in the process of taking a radical look at our organizational processes, regulations, and structure to determine what work can be eliminated, reduced or performed differently. As part of this effort, Western initiated a review of Department of Energy regulations that govern how we operate. We identified requirements that are labor intensive to administer and/or time consuming without commensurate value to Western. If we were no longer required to comply with these DOE regulations, an FY 1994 study showed that Western could save up to 20 FTE, and approximately $1.1 million. Western has not completed a detailed analysis of potential savings as a result of operating as a nonFederal utility company.

ENERGY POLICY ACT

Mr. Myers. The Energy Policy Act of 1992 increased access to the electric transmission grid for non-utility generators and utilities seeking to wheel power into non-native markets. How has this impacted the PMAs?

Mr. Nordhaus. I will ask each PMA to respond.

Mr. Deihl. Due to the unique isolated configuration of the electrical transmission systems in Alaska, APA has not been and does not anticipate being impacted by Energy Policy Act of 1992 (EPACT) transmission access issues.

Mr. Hardy. The major impact on Bonneville of the Energy Policy Act of 1992 has been on our power business. Some of the access requests made to Bonneville under the Act deal with the traditional services that Bonneville has always provided, as I mentioned. However, some of the more recent requests involve utilities that have made special offers to Bonneville's existing customers, and then have made requests to Bonneville under the Energy Policy Act that require Bonneville to provide wheeling services for those utilities to reach Bonneville's customers.

More generally, open access and lower natural gas prices have dramatically lowered power prices in the Northwest. This has presented Bonneville with substantial competitive challenges, as described in my testimony.

Bonneville has not seen any requests from non-utility generators. There are some developers that are studying projects and Bonneville may be providing technical assistance to them.

Mr. Jourolmon. Southeastern Power Administration does not own any transmission facilities and thus cannot provide access to others. However, Southeastern can seek transmission access to deliver power using the EPACT provision to secure an order from FERC requiring transmitting utilities to provide service to Southeastern. As a result of EPACT and the changing electric utility industry, Southeastern will have to formulate a power marketing policy regarding the portability of preference customers' allocations of power.

Mr. Reeves. EPACT requires that the PMAs with high voltage transmission systems, as well as other electric utilities, provide wholesale transmission service to new and existing customers. During the past year, Southwestern has handled numerous requests for transmission service based on the EPACT amendments and has executed interruptible transmission agreements. Other requests may necessitate the construction of new facilities if existing facilities are insufficient to accommodate future customer requirements, to be paid for by the requestors.

Mr. Shafer. Western has had a number of requests for firm and non-firm transmission from utilities and power marketers. However, no formal requests under section 211 of the Energy Policy Act have been received. Western has been able to provide contracts for firm and non-firm services, as appropriate, for all requests to date. A section 211 request and FERC could order us to provide transmission which would require construction of new facilities, to be paid for by the entities needing the new transmission service.

Another impact of the Energy Policy Act was the formation of Regional Transmission Groups. Western's Area Offices have joined, or will join, two of these groups which are being formed. Four Area Offices are members of the Western Regional Transmission Association and two of the Areas will become members of the Southwest Regional Transmission Association in the very near future. Western will develop contracts and rates which will be filed with the associations to provide comparable service.

REVOLVING FUND

Mr. Myers. What steps would be necessary to establish a revolving fund for each PMA in fiscal year 1996 to reduce the need for appropriations? What appropriations savings would result? What legislation would be required to establish a revolving fund for each?

Mr. Nordhaus. Bonneville Power Administration presently has a revolving fund. For the other PMAs, authorizing legislation would need to be passed by Congress. The U.S. Treasury would need to establish a special account on behalf of each PMA. This would give the PMAs authority to expend money from the separate "special accounts" for annual on-going costs such as operation and maintenance, purchase power and wheeling, and/or capitalized investments without annual appropriations. Provisions would be necessary to provide working capital.

The Administration, including the Department of Energy and the Power Marketing Administrations, has made no proposal to convert the PMAs to revolving fund status.

STREAMLINING

Mr. Myers. In these times of constrained resources, what actions are each of you taking to streamline your organizations by reducing costs and personnel?

Mr. Deihl. In support of DOE's Strategic Plan and the National Performance Review recommendations, APA has developed a Strategic Plan that guides the agency towards a quality management-based organization. APA continues to streamline and reorganize into a customer-focused agency. APA has reduced supervisory positions by 70 percent, acquisition specialist positions by 75 percent, and eliminated several "no-value" in-house reporting requirements.

Mr. Hardy. By the end of this month, we will have reduced our workforce by about 350 Bonneville employees from the time we initiated our Competitiveness Project. We expect to reduce Bonneville contractors by about 200 by the end of FY 1995. We also expect to meet our goal of reducing the overall workforce by 1,000 workers by the end of FY 1997. Further, our recent targeted reductions of an additional $250 million per year on average over the next five years will likely increase the number of workforce reductions.

Mr. Jourolmon. Southeastern is facing expanding customer requirements at this time and is trying to meet them without incurring any additional costs. Southeastern is reviewing several alternative financing techniques, including bill crediting and direct payment by its customers. If implemented, these techniques have the potential of greatly reducing Southeastern's budget. Also, through streamling efforts, we have reduced the number of supervisory positions by more than 50 percent. The supervisor-to-employee ratio has decreased from 1:3.5 to 1:8.

Mr. Reeves. Southwestern has reduced its total Federal employees from 211 in July

1994 to 200 in March 1995 and, for the same time period, support service contractor employees from 57 to 40. In addition, Southwestern has reduced its number of managers and supervisors by approximately one-half of the number it was one year ago and we are not refilling headquarters and administrative staffs as they are reduced by attrition unless there is a documented critical need for the job.

Southwestern is involved in a number of cost reduction and efficiency measures. First, we are negotiating reductions in our General Support Services Contract for work to be performed in FY 96, FY 97, and FY 98. The Agency has also projected cost savings in other administrative areas including the small purchases program through the elimination of certain classes of blanket purchase agreements, potential reduction of GSA charges and program efficiencies such as completing the PMA Integrated Financial Management System, and implementing optical disk scanning for records management.

Mr. Shafer. Western is embarking on the second phase of its Strategic Plan, as I will discuss shortly. During the first phase we took a systematic look at a number of Western's activities, to adjust our methods of operations, decrease our operating costs, and make our work environment more quality conscious. During the second phase we are in the process of re-engineering Western to enhance our ability to meet our customers' needs and remain competitive by taking a radical look at our organizational processes and structure to determine what work can be eliminated, reduced, or performed differently.

We have reduced our workforce by almost 10 percent. We are delayering management and significantly increasing the supervisor-to-employee ratio from 1:5 in May 1994 to an estimated 1:8 to June 1995. The number of organizational units are being reduced from 192 in May 1994 to an estimated 121 by June 1995.
These steps and other cost containment decisions have resulted in a $26 million cost savings in FY 1994 and FY 1995. Western's commitment to its customers is to limit growth of annual operating expenses to no more than 2 percent per fiscal year through FY 1996. This commitment is reflected in our FY 1996 budget request.

SALE OF WHOLESALE POWER

Mr. Myers. Please provide a table showing the composite average rate at which each PMA sold wholesale power in fiscal years 1993, 1994, and 1995.

Mr. Nordhaus. Mr. Myers, I will provide for the record a table showing the composite rate for each of the PMAs.

In this table, the composite rate for Western is an average of firm composite rates of all Western projects. The rate for each Western project reflects the differences in project age and project diversity inherent in its large service area. No one rate can be indicative of area conditions when Western's service area covers 15 states. Therefore, I will provide a second table for the record showing the composite rate for each Western project.
(The tables follow:)

Power Marketing Administrations
Composite Wholesale Power Rates
for FY 1993, FY 1994 and FY 1995

	FY 1993	FY 1994	FY 1995
Alaska Power Administration	2.49 cents/kWh	2.51 cents/kWh	2.65 cents/kWh
Bonneville Power Administration [1]	2.11 cents/kWh	2.56 cents/kWh	2.64 cents/kWh
Southeastern Power Administration [2]	1.89 cents/kWh	1.98 cents/kWh	2.12 cents/kWh
Southwestern Power Administration [2]	3.04 cents/kWh	2.92 cents/kWh	2.87 cents/kWh
Western Area Power Administration [3]	1.69 cents/kWh	1.75 cents/kWh	1.85 cents/kWh

[1] Excludes capacity sales.
[2] Peaking capacity and energy.
[3] Average of firm composite rates of all Western projects.

Western Area Power Administration
Composite Wholesale Power Rates by Project
for FY 1993, FY 1994 and FY 1995

	FY 1993	FY 1994	FY1995
Boulder Canyon Project	1.46 cents/kWh	1.26 cents/kWh	1.26 cents/kWh
Central Valley Project	2.88 cents/kWh	3.00 cents/kWh	3.00 cents/kWh
Loveland Area Project	2.01 cents/kWh	2.07 cents/kWh	2.17 cents/kWh
Parker-Davis Project	.90 cents/kWh	1.16 cents/kWh	1.20 cents/kWh
Pick-Sloan Missouri Basin Program (Eastern Division)	1.22 cents/kWh	1.33 cents/kWh	1.42 cents/kWh
Salt Lake City Integrated Projects	1.67 cents/kWh	1.67 cents/kWh	2.02 cents/kWh

DEBT TO TREASURY

Mr. Myers. Please provide a table showing for each PMA the amount of the payment to Treasury to retire the debt in fiscal year 1994, proposed for fiscal years 1995 and 1996, and the total amount of indebtedness at the end of fiscal year 1994.

Mr. Nordhaus. I will provide a table for the record showing principal repayments, excluding interest.
(The table follows:)

PMA Repayment Detail
(Dollars in Millions)

PMA	Actual FY 1994	Estimated FY 1995	Estimated FY 1996	Total Unpaid Investment Thru FY 1994
Alaska	$ 2.2	$ 1.1	$ 2.0	$ 164
Bonneville	191.0	523.6 [1]	200.8	10,100
Southeastern	33.2	36.8	36.4	1,008
Southwestern	32.2 [2]	25.3	24.5	678
Western	41.0 [3]	19.0	22.0	3,670

[1] Includes a projected $156 million capital transfer in FY 1995 representing an unscheduled amortization payment connected with receipts from sale of capacity to non-Federal participants in the AC Intertie transmission lines. Amount and year of this capital transfer are subject to change pending conclusion of the sale.

[2] The FY 1994 figure is slightly higher than the subsequent years. The FY 1995 and FY 1996 estimates are based on average year projections.

[3] Excludes prior year adjustments.

PMA CUMULATIVE INVESTMENT

Mr. Myers. Please provide a table showing cumulative investment for each PMA, the receipts to date and how these receipts have been used to offset operating expenses, to repay interest, investment costs and other purposes, and the remaining unpaid investment.

Mr. Nordhaus. I would like to insert the following table for the record. It presents the PMAs' cumulative revenues and status of repayment through FY 1994.
(The table follows:)

Status of Repayment as of September 30, 1994 [1]
(Cumulative Dollars in Millions)

PMA	Power Investment [2]	Power Revenues	Operation and Maint.	Purchased Power	Interest Expense	Cumulative Repayment	Unpaid Investment
Alaska	206	154	54	0	58	42	164
Bonneville	12,705	37,746 [3]	6,087	22,764	6,290 [4]	2,605 [3]	10,100 [5]
Southeastern	1,476	2,483	1,125	70	820	468	1,008
Southwestern	1,008	2,152	737	530	554	330	678
Western	5,891	11,874 [6]	4,610	3,187	2,088 [7]	2,221	3,670 [5]
PMA total	21,346	54,509	12,613	26,551	9,817	5,666	15,620

1/ All data are on accrual basis of accounting, except as noted, and are based on the best information available.

2/ The power investment to be repaid includes irrigation and other nonpower investment assigned to power for repayment for Bonneville and Western.

[3] Cash rather than accrual basis.

[4] Interest is net of AFUDC (capitalized interest).

[5] The unpaid investment does not include construction work in progress or capitalized deficits.

[6] Net of income transfers of $183 million.

[7] Includes interest of $238 million on which payment was deferred. This interest will be repaid with interest.

OPERATING FACILITIES AND CAPACITIES

Mr. Myers. Please provide a table showing for each PMA the installed generating capacity marketed, the number of generating plants serviced, the number of substations owned, the length of transmission line owned, and the replacement cost of all facilities.

Mr. Nordhaus. I will provide the information for the record.
(The information follows:)

PMA STATISTICS
(As of the end of FY 1994)

PMA	Installed Capacity (MW)	Plants	Number of Substations	Transmission Lines (Miles)	Replacement Costs (millions)
Alaska	108 [1]	2	4	88	$ 362[2]
Bonneville	22,279 [3]	30 [4]	390 [4]	14,800 [4]	4,544[5]
Southeastern	3,092	23	0	0	[6]
Southwestern	2,158	24	24	1,380	[6]
Western	10,576	55	257	16,727	[6]
PMA total	38,213	134	675	32,995	

[1] Alaska owns and operates the generation facilities.

[2] Replacement cost less depreciation based on asset valuation study by Coopers & Lybrand, 1986, updated by Alaska, 1995.

[3] Instantaneous Generating capacity (peak MW).

[4] FY 1994 DOE Statistics.

[5] No replacement cost study has been prepared; this is the total plant investment in transmission facilities owned and operated by Bonneville in historical dollars. Replacement cost may not be relevant in an era of competition, since cost of complete replacement may not be recoverable.

[6] Studies have not been conducted to estimate replacement costs.

PMA NET GENERATION

Mr. Myers. For each PMA, please identify by type, the net generation of electricity in fiscal year 1994, and estimated for fiscal years 1995 and 1996. What percent of each region's power is supplied by each PMA?

Mr. Nordhaus. I will provide a table for the record.

(The table follows:)

Net Generation (MWh)

PMA	Type	FY 1994 Actual	FY 1995 Estimate	FY 1996 Estimate	% of Region's Power Supplied by PMA
APA	Hydro	403,000	389,000	416,000	9%
BPA	Hydro	63,814,000[1]	67,135,000[2]	67,135,000[3]	40%
	Nuclear	6,226,000	6,218,000	7,172,440	
	Other	730,000	1,297,000	867,123	
SEPA	Hydro	7,887,277	8,025,000	8,050,000	2%
SWPA	Hydro	6,939,000	5,125,000	5,182,900	3-4%
WAPA	Hydro	26,035,000	28,104,000	28,900,000	5%
	Thermal[4]	4,275,000	4,167,000	4,167,000	

[1] Includes secondary energy, which varies according to actual water conditions.

[2] Firm capability, no secondary energy included.

[3] Firm capability, no secondary energy included; does not include effects from the 1995 Biological Opinion, which is expected to reduce energy producing capability by 700 average Megawatts per year.

[4] Western markets the generation from the 547 megawatts of the Government's share in the Navajo Powerplant that is in excess of the needs of the Central Arizona Project.

WIDESPREAD USE OF ENERGY

Mr. Myers. Can the Department demonstrate that under current policies the power sold by the PMAs results in the most widespread use of energy from projects owned by the Federal government?

Mr. Nordhaus. Federal hydropower is distributed in the most widespread manner feasible. The most widespread use requirement of the Flood Control Act of 1944 and Reclamation Law must be balanced with other requirements of the same Acts, such as lowest possible cost, sound business principles, and the "preference" principle. The PMAs, except for Bonneville, allocate power through a public involvement process which considers the most widespread use of energy in determining to whom power is allocated.

I will ask Mr. Hardy to respond for the Bonneville Power Administration.

Mr. Hardy. Under current policies consistent with the Bonneville Project Act and the Pacific Northwest Electric Power Planning and Conservation Act, the Regional Act, Bonneville is obligated to continue serving and meeting the load growth of its public utility customers.

COMPETITIVE BIDS FOR FEDERAL POWER

Mr. Myers. If the power generated by government-owned facilities were made available to all interested purchases on the basis of competitive bids, would this result in an increase in revenues to the Federal government from such sales?

Mr. Nordhaus. Generally, revenues to the U.S. Treasury would increase if power generated at government-owned facilities were sold in a competitive bid process.
I will ask Mr. Hardy to respond for the Bonneville Power Administration.

Mr. Hardy. If the power generated in the Columbia Basin and currently marketed by Bonneville were released to competitive bid, Bonneville believes the result would likely not be an increase in revenues in the near-term because of current low electricity prices.

ALASKA POWER ADMINISTRATION

SALE OF ALASKA POWER ADMINISTRATION

Mr. Myers. Could you summarize the proposed legislation to sell the Alaska Power Administration?

Mr. Deihl. The divestiture proposal consists of the sale of the Eklutna Project to the local Anchorage utilities and the Snettisham Project to the State of Alaska, and subsequent close-out of the Alaska Power Administration. The legislation would authorize the sale of APA assets in accordance with the negotiated sales agreements. The agreements establish a sales price formula for each project that balances ratepayer and taxpayer concerns in a fair manner.

Mr. Myers. What is the status of this legislation?

Mr. Deihl. The Administration's bill to sell the Alaska Power Administration assets was forwarded to the Congress on April 7, 1995. The Alaska Congressional delegation has already introduced similar legislation in both Houses of Congress entitled, "Alaska Power Administration Sale Act." Senate Energy Committee Chairman Murkowski introduced and Senator Stevens co-sponsored S. 395 on February 13, 1995. House Resources Committee Chairman Young introduced H. R. 1122 on March 3, 1995. Hearings were held by both Committees, with Senate Energy voting, on March 15, 1995, to report S. 395 to the full Senate.

Mr. Myers. The budget projects the sale of Alaska at the end of fiscal year 1996. Is this a reasonable date?

Mr. Deihl. The end of FY 1996 is a reasonable date, for budget and transition planning purposes, to have both Projects transferred to the new owners if the sale is authorized this summer. Our proposed legislation states that APA will cease to exist within one year of the date the last Project is transferred to the purchasers. It is possible that it could take longer to complete the transfer if unforeseen safety, engineering, or realty concerns are identified prior to the transfer.

Mr. Myers. For purposes of selling the Alaska Power Administration, what is the current debt owed to the Treasury, the amount repaid to date, and the discounted value of the amount to be repaid?

Mr. Deihl. The current APA debt owed to the treasury is $163.9 million and principal repaid to date is $42.3 million.

For the purpose of selling APA and assuming 8 percent interest with a transaction date of September 1996, the present value calculation sets the discounted value of the amount to be repaid at $87.4 million.

Mr. Myers. What is the estimated close-out costs once the sale is authorized by Congress?

Mr. Deihl. We are in the process of fine tuning our estimate for close-out costs. Currently, we have a range for potential close-out costs of $3.5 million to $5.5 million. APA will work with the Department and Congress to determine the appropriate source of required close-out funding.

Mr. Myers. Are these costs included in your fiscal year 1996 budget?

Mr. Deihl. The close-out costs are not included in our FY 1996 budget request.

Mr. Myers. How will you ensure that the sales price provides an adequate and fair return on the investment of the taxpayer?

Mr. Deihl. The sale price formulas contained in the two Purchase Agreements were negotiated after lengthy study and review of comments received during the open and public comment processes. We believe the negotiated sale price formulas for the two projects represent the best achievable return for the taxpayers, while avoiding significant retail rate increases for the ratepayers, the intended beneficiaries of the projects. The sale price is approximately 86 percent of the net present value of required payments to the U. S. Treasury under continued Federal ownership. Depending upon the interest rates on the Transaction Date, the purchase price could vary slightly up or down from today's estimate.

BONNEVILLE POWER ADMINISTRATION

COMPETITIVENESS PROJECT

Mr. Myers. Can you describe Bonneville's "Competitiveness Project"?

Mr. Hardy. As I stated in my testimony, Bonneville's Competitiveness Project is the agency's vehicle for creating change. We believe the key to our success is for Bonneville to be a customer-focused, cost-conscious, results-oriented, market-driven government organization. The overall goal of the Competitiveness Project is to allow Bonneville to more efficiently and effectively accomplish its mission as outlined in organic statute, not to change the mission itself. Three tools to achieve this goal are: controlling costs, improving services, and increasing revenues.

My testimony discusses how we have reduced our costs and that we plan to seek additional reductions to be included in Bonneville's final Business Plan. We have improved our services by completely reorganizing our work force. Prior to the re-organization, we had no sales force and now Bonneville has account executives who have direct contact with individual customers to focus on customer service. Finally, Bonneville is committed to building revenues through enhancing current products and existing markets, while seeking new markets. We are looking at unbundling products and services and offering customer-tailored packages that will benefit customers and enhance our revenues.

ENDANGERED SPECIES ACT

Mr. Myers. Please describe how the Endangered Species Act is impacting operations and the estimated cost of compliance in fiscal years 1995 and 1996.

Mr. Hardy. The Endangered Species Act affects our operation primarily through changes in river operations and in requiring additional research on listed species of salmon. Since the original listing of Snake River spring and summer chinook in 1992, Snake River fall chinook, and Snake River sockeye salmon in 1991, operations of the Columbia and Snake River system have been dramatically altered. In addition, beginning in 1994, listing of the Kootenai River white sturgeon has affected operations at Libby Dam. Operational changes include a variety of measures, such as modifying the timing and amount of release of water from storage reservoirs to aid downstream migration, spilling water at projects to increase fish passage, lowering reservoir pool levels and limiting their fluctuation, and drafting reservoirs deeper than normal during the summer which affects reservoir refill the following year. The acquisition of irrigation water on a willing seller - willing buyer basis to supplement flows for fish also assists in compliance with the Endangered Species Act.

The issuance of the 1995 Biological Opinion by the National Marine Fisheries Service identified a number of recommended actions that Bonneville and the other Federal action agencies must pursue to avoid further jeopardy of listed species. Transportation of young salmon will be decreased and spill operations will be increased. The National Marine Fisheries Service's recommendation substantially alters the operation of the Federal Columbia River Power System compared to the 1993 and 1994 Biological Opinions. Their recommendation increases the priority for the use of reservoirs for fish flow augmentation relative to power production. Priorities previous to the 1995 Biological Opinion were on the order of flood control, power production, and then fish and wildlife. The 1995 Biological Opinion reprioritized these actions in the order of flood control, fish and wildlife, and then power production.

In 1991, the priority allocation of Federal reservoir storage for fishery mitigation was the equivalent of 30 percent of Federal reservoir storage. Previous to the most current Biological Opinion, the equivalent of 70 percent of Federal storage was allocated to fish. The 1995 Biological Opinion increased this allocation to the equivalent of 90 percent of Federal reservoir storage. It should be noted, however, that total federal reservoir storage capability amounts to only about 30% of the average annual runoff of the Columbia River as measured at the Dalles.

The Endangered Species Act, through the actions called for in the 1995 Biological Opinion, also called for additional monitoring and evaluation of the effects of river operations on the listed species. The specific actions for these activities are still being analyzed.

The Endangered Species Act actions called for in the 1995 Biological Opinion represent an annual incremental increase for fish and wildlife expenses in fiscal years 1995 and 1996 of about $100 million and $140 million, respectively. This incremental increase is expected to grow to $188 million in fiscal year 1998 and $287 million in fiscal year 2001. These expenses come on top of about an estimated $326 million, including $62 million in forgone revenues, for fish and wildlife actions called for under the Pacific Northwest Power Act and previous Endangered Species Act required actions in fiscal year 1994. Actual expenses in fiscal year 1995 will vary based upon water availability. Bonneville's total fish and wildlife costs, most of which are related to the Endangered Species Act, are estimated to be about $404 million in fiscal year 1995 and $477 million in fiscal year 1996. I would like to provide the following tables for the record in order to provide more detail of these expenses.

(The tables follow:)

UPDATED TO INCLUDE INCREMENTAL COSTS OF NMFS 1995 BIOLOGICAL OPINION

(Without Drawdown in 2001)

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET SUBMITTAL
BONNEVILLE POWER ADMINISTRATION
FISH AND WILDLIFE INVESTMENTS CROSSCUT

(Dollars in Millions)

SB33C2
3/8/95

	FIRST FUNDED BY:	FY 1994		FY 1995	FY 1996	FY 1997	FY 1998	FY 2001
CAPITAL INVESTMENTS								
FISH AND WILDLIFE (OUTLAYS) 1/	BPA	20.5	—	28.3	27.3	27.3	27.3	22.3
ASSOCIATED PROJECTS (FEDERAL HYD	COE	62.6	—	24.4	85.1	220.8	345.6	835.5
TOTAL CAPITAL INVESTMENTS		83.1	83.1	52.7	112.4	248.1	372.9	857.8
PROGRAM OPERATING EXPENSES								
BPA FISH AND WILDLIFE PROGRAM (OUTLAYS) 1/								
NON-E S A ACTIVITIES	BPA	43.5	—	40.3	52.5	52.6	52.8	53.7
E S A ACTIVITIES	BPA	12.4	—	30.9	47.6	53.6	53.6	66.6
SUBTOTAL		55.9	55.9	71.2	100.1	106.2	106.4	120.3
BPA POWER PURCHASES FOR FISH ENHANCEMENT. (NET)								
U. COLUMBIA RIVER WATER BUDGE	BPA	40.0	40.0	—	—	—	—	—
SPILL FOR JUVENILE/ADULT PASSA	BPA	5.7	5.7	—	—	—	—	—
FLOW AUGMENTATION 4/	BPA	66.0	83.0	—	—	—	—	—
REDUCED FOREBAY LEVELS	BPA	0.0	0.0	—	—	—	—	—
ESA - NMFS FUND (ADD. SPILL FOR	BPA	0.0	0.0	—	—	—	—	—
SUB TOTAL 5/		111.7	128.7	228.0	261.0	266.0	270.0	265.0
ASSOCIATED PROJECTS (FEDERAL HYDRO) 6/								
O & M LOWER SNAKE RIVER HATCH	USFWS	12.4	—	14.2	14.5	15.2	15.7	17.6
O & M CORPS	COE	16.9	—	20.8	20.8	20.8	20.8	20.8
O & M BUREAU (hatchery eff. FY 199	BOR	1.3	—	1.3	1.4	1.5	1.6	1.9
SUBTOTAL		30.6	30.6	36.3	36.7	37.5	38.1	40.3
OTHER (NW POWER PLANNING COUNCIL)	BPA	4.3	4.3	4.3	4.4	4.6	4.7	4.9
TOTAL PROGRAM OPERATING EXPENSES		202.5	219.5	339.8	402.2	414.3	419.2	430.5
PROGRAM RELATED FIXED EXPENSES 7/								
INTEREST EXPENSE	BPA	46.1	—	46.6	54.1	75.5	104.8	196.7
AMORTIZATION EXPENSE	BPA	7.3	—	9.4	11.2	13.0	14.9	19.0
DEPRECIATION EXPENSE	BPA	8.4	—	8.9	9.5	11.9	15.4	27.8
TOTAL PROGRAM FIXED EXPENSES		61.8	61.8	64.9	74.8	100.4	135.1	243.5
GRAND TOTAL PROGRAM EXPENSES		264.3	281.3	404.7	477.0	514.7	554.3	674.0
FOREGONE REVENUES								
U. COLUMBIA RIVER WATER BUDGE	BPA	0.0	0.0	—	—	—	—	—
SPILL FOR JUVENILE/ADULT PASSAG	BPA	32.0	33.0	—	—	—	—	—
FLOW AUGMENTATION	BPA	0.0	0.0	—	—	—	—	—
REDUCED FOREBAY LEVELS 8/	BPA	25.0	25.0	—	—	—	—	—
ESA - NMFS FUND (ADD. SPILL FOR	BPA	5.0	5.0	—	—	—	—	—
SUBTOTAL 5/		62.0	63.0	0.0	0.0	0.0	0.0	0.0
TOTAL - PROGRAM EXPENSES & FOREGONE REVENUES		326.3	344.3	404.7	477.0	514.7	554.3	674.0

THE ACCOMPANYING NOTES ARE AN INTEGRAL PART OF THIS TABLE.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET SUBMITTAL
BONNEVILLE POWER ADMINISTRATION
Updated to Include Incremental Costs of NMFS 1995 Biological Opinion
Notes - Fish and Wildlife Investments Crosscut Table

General

These notes support the table that displays the Pacific Northwest electric utility ratepayers' investment in fish and wildlife activities within the Columbia River Basin. The table shows the annual expense for all fish and wildlife investments funded under the Federal Columbia River Power System from a rate making, revenue requirement perspective. The table covers the Fiscal Years (FY) 1994 to 1996. For information, FY's 1997, 1998 and 2001 have been added. The table updates the previous table by incorporating the estimated annual incremental expenses associated with the National Marine Fisheries Service's (NMFS) 1995 Biological Opinion (as identified in a NMFS's table "Biological Opinion Cost to BPA" dated February 28, 1995). Amounts for FY 1994 are estimated actuals. The costs shown in the table reflect budget outlays (rather than obligations) for the years shown. **The expense estimates shown for FY 2001 are based on a "no drawdown" assumption.**

The title "Capital Investments," shown at the top of the table, is presented for information. The annual expense (interest, amortization, and depreciation) associated with these capital investments is shown under the title "Program Related Fixed Expenses."

- The table represents a "revenue requirement" view of BPA's fish and wildlife funding responsibilities. All expenses in these tables are paid for by BPA's ratepayers.
- Legislation will be introduced to transfer responsibility for funding the operations and maintenance of the Mitchell Act hatcheries from the National Marine Fisheries Service to BPA starting in FY 1996. Annual expense for this activity is $14.1 million. These funds are not included in this table.
- The power purchase and foregone revenues estimates for FY 1995 and outyears are based on the NMFS 1995 Biological Opinion. Power purchases and foregone revenues are displayed as a range in FY 1994 because actuals are not available. The estimates for FY 1995 and outyears **reflect point estimates based on the average of 50 water years** (maximum energy costs are not shown in the table). Credit for the Northwest Power Act Section 4(h)(10)(C) offset is not reflected in the FY 1994 estimates.

Footnotes - Specific

1/ Based on BPA outlays. Outlays for FY 1995 through 2001 are assumed to be the same as obligations. Under BPA Fish and Wildlife Program, $16 million in expenses have been included for Upper Snake River water acquisition in FY 2001.

2/ Based on Corps of Engineers Plant-in-Service assumptions as of December 1994, updated to reflect contingent investments associated with the 1995 NMFS Biological Opinion.

3/ The estimate for FY 1994 reflects NMFS's 1994 - 1998 Biological Opinion spill levels after June 20 and increased levels of spill May 11 - June 20.

4/ The estimate for FY 1994 reflects NMFS's 1994 - 1998 Biological Opinion flow augmentation volumes plus the additional releases from Dworshak (to elevation 1490 feet) and Upper Columbia reservoirs (550 mAF).

5/ After FY 1994, the Subtotal for BPA Power Purchases for Fish Enhancement reflects the sum of net costs for power purchases and foregone revenues since a breakdown was not available at the time the table was produced. Estimates shown are the average of 50 water years.

6/ Amounts shown reflect the fish and wildlife costs assigned for repayment to the Treasury by power. COE O&M estimates could increase as a result of new initiatives (see Footnote 2).

7/ Interest expense includes BPA's interest on bonds and interest on the Federal investment in fish and wildlife assigned to power. Amortization reflects BPA's bonds and depreciation reflects the Federal investment.

8/ The estimate for FY 1994 reflects the operation to minimum operating pools at the four Lower Snake River projects and John Day at minimum irrigation pool as described in the NMFS's 1994 - 1998 Biological Opinion.

(96congr)

1995 BIOLOGICAL OPINION COSTS TO BPA

(INCREMENTAL TO THE 1994-98 BIOLOGICAL OPINION)

REVISED AS OF 2/28/95

	Draft 1995 Biological Opinion (Millions $)						
Fiscal Year	**1995**	**1996**	**1997**	**1998**	**...**	**2001**	**2001**
						No Drawdown	W/ Drawdown [9]
1. Energy Costs [1]							
a. Expected value energy costs (average over 50 water years) [2]	76	61	60	59	...	50 [10]	178 [10]
b. Reserve coverage for increase in water risk	0	17	19	20	...	19	23
c. Contingent spill (not in TOTAL) [3]	*N.E.*	*N.E.*	*N.E.*	*N.E.*		*N.E.*	*N.E.*
d. Contingent draft (not in TOTAL) [3]	*8-14*	*8-14*	*8-14*	*8-14*	..	*8-14*	*8-14*
e. Max energy cost (not in TOTAL)	*114*	*189*	*188*	*187*	...	*220*	*381*
2. Capacity Costs							
Operational flexibility at John Day	0	16	16	16	...	16	16
1% peak efficiency	9	9	9	9		9	9
3. Upper Snake River Water Acquisition [4]	0	0	0	0	...	16	16
4. Idaho Power Shaping Costs	5	5	5	5	...	10	10
5. Reimbursable Investment Costs							
a. Planned investment costs [5]	0	0.2	5	12	...	26	26
b. Contingent investment costs [6]	0	0	12	27	...	102	267
6. Fish Program Costs [7]	11	32	39	40	...	39	39
TOTALS: [8]	**101**	**140**	**165**	**188**	**...**	**287**	**584**

1/ This table assumes there would be no compensation of Canadian parties by BPA for violation of the Columbia River Treaty. However, BPA costs for replacing up to 20 feet of draft from full from Arrow could be $25 million in a year.

2/ Energy cost estimates assume replacement of hydro system losses with short-term purchases. In the longer run, reliability concerns may cause some of these losses to be replaced by some amount of combustion turbines, increasing the long-term costs of this plan. In addition, these costs represent costs to BPA only; BPA costs are estimated to be 75 percent of total regional costs.

3/ 1995 BO allows for TMT to modify project draft limits and spill levels. Draft and spill beyond the levels described in BO would increase costs, potentially significantly, but cannot be determined precisely in advance. (N.E.=not estimated)

4/ This assumes that release rates are increased from the present 1.5 kcfs limits for snails.

5/ Includes prototype testing of surface bypass, engineering and design for LSN drawdown, JDA to MOP, relocation of BON outfalls, additional fish barges, and other miscellaneous system improvements.

6/ Includes installation of baffled spillways, surface bypass for turbine units, stilling basin modifications at IHB and JDA, and TDA screens.

7/ This is a rough estimate and includes BPA estimates of research, monitoring and evaluation costs for measures in the draft Biological Opinion plus new hatchery, habitat, and harvest measures, as estimated by Northwest Power Planning Council.

8/ This is a rough estimate of the increase that will be necessary in BPA's revenue requirement. However, detailed rates and revenue model analysis has not yet been performed, therefore, these numbers are subject to change.

9/ Assumes year-round LSN natural river drawdown and JDA spillway crest drawdown. If LSN drawdown is limited to spillway crest for 4.5 months, energy costs would decrease by approximately $100 million and contingent investment costs would increase by approximately $30 million.

10/ This estimate reflects a $20 million reduction due to less spill resulting from the installation of baffled spillways.

Mr. Myers. How do these costs compare to prior year costs?

Mr. Hardy. Total Bonneville fish and wildlife costs have increased from roughly $150 million in fiscal year 1991, when the endangered salmon stocks were first listed, to $404 million in fiscal year 1995.

Mr. Myers. How will the cost of compliance with the Endangered Species Act be allocated between the ratepayers and taxpayers.

Mr. Hardy. The majority of the Bonneville expenses related to the Endangered Species Act are funded by rate payers. Bonneville has analyzed what expenses in fiscal year 1995 and in future years should be allocated to fish and wildlife project purposes, in accordance with section 4(h)(10)(C) of the Northwest Power Act of 1980, which calls for Bonneville's fish and wildlife expenses to be allocated to the multiple purposes of the Federal projects in the Columbia River Basin. For any amount of expenses allocated under this legislative provision to non-power purposes, we expect the tax payer will accordingly bear this cost. Current analysis indicates that 73 percent of the expenses for Bonneville's direct fish and wildlife program and power purchases for fish enhancement are the responsibility of the rate payers. As I said in my testimony, Bonneville will be able to recoup the full amount of the 4(h)(10)(C) non-power allocations for the next two years and a substantial portion of that in perpetuity.

FEDERAL AND NON-FEDERAL UTILITY EXPENSES

Mr. Myers. As a Federal utility, is Bonneville subject to any types of expenses beyond those incurred by nonFederal utilities?

Mr. Hardy. Some non-Federal utilities incur expenses that are similar in type to those of Bonneville, however, as a Federal utility Bonneville is held to a higher degree of accountability in terms of expenses required to meet Federal environmental concerns, for example, such as the National Environmental Policy Act requirements and certain portions of the Endangered Species Act. For example, each year Bonneville is subject to section 7 consultations regarding operation of the Federal hydro system. Such consultations are typically not required for non-Federal utility owners of hydroelectric facilities.

In addition, as a Federal agency Bonneville is required to expend more to meet Federal standards in terms of payroll, travel, procurement and other costs of doing business. To find relief from some of these additional costs was one of the main reasons Bonneville sought to be a Reinvention Laboratory under the National Performance Review. Bonneville has been successful in getting waivers from a part of these costs, but needs government corporation status to attain permanent relief from these additional expense burdens.

FISH AND WILDLIFE PROGRAMS

Mr. Myers. Bonneville has funded fish and wildlife for several years. Can you quantify the results of these programs?

Mr. Hardy. Bonneville has difficulty quantifying the results of fish and wildlife investments in terms of the increasing numbers of fish or wildlife. However, over the years Bonneville has successfully funded numerous fish and wildlife activities such as construction of fish hatcheries including the Umatilla, Colville, Spokane Tribal, Sherman Creek and Cabinet Gorge fish hatcheries. Bonneville has funded fish passage facilities at Tumwater Falls and Dryden Dam on the Wenatchee River, Three Mile Dam on the Umatilla River and the Wapato Diversion Dam on the Yakima River. Major fish screen efforts are located on the Yakima River basin in Washington and the Salmon River basin in Idaho. Over 80,000 acres of wildlife habitat and targeted species are protected as a result of the fish and wildlife program. The goal is to achieve and sustain levels of habitat and species productivity to fully mitigate for the wildlife losses that have resulted from construction and operation of the Federal and non-Federal hydroelectric system.

Bonneville is moving ahead to meet its commitment to the region's fish and wildlife by forging creative power arrangements with other regions, developing innovative water agreements and implementing changes in hydro operations that will increase fish survival and minimize costs. This is occurring despite a prolonged drought that has compounded the salmon crisis, giving Bonneville less water with which to operate. As an example of the drought impact, for the past three years, Bonneville has imported more electric power than we have exported. These efforts have been expensive. Since passage of the Northwest Power Act, Bonneville has invested, in terms of expenditures and lost revenues, over $1 billion to protect, mitigate and enhance fish and wildlife. The annual addition to this investment continues to increase in size.

Mr. Myers. What percentage of Bonneville's expenses are incurred for fish and wildlife programs?

Mr. Hardy. Currently, about 1 of every 10 dollars of Bonneville's operating expenses for FY 1995 is targeted for fish and wildlife expenditures. Bonneville's estimated annual fish and wildlife investment for fiscal year 1996, including capital investments, purchase power and foregone revenues, ranges from about $280 to $355 million, depending on water conditions. It does not take into account additional fish mitigation measures recently proposed by the Northwest Power Planning Council, U.S. Fish and Wildlife Service, or National Marine Fisheries Service. The 1994 Columbia River Basin Fish and Wildlife Program adopted by the Council in December 1994 and the Biological Opinion issued by the National Marine Fisheries Service earlier this month on operation of the Federal Columbia River Power System call for increased augmentation of flows during juvenile fish migration, increased spill, and additional structural changes at hydroelectric projects to potentially improve fish passage. All of these efforts result in increased expenditures or lost revenues by Bonneville.

Mr. Myers. Are these costs similar to those incurred by nonFederal utilities?

Mr. Hardy. We do not believe that they are. Bonneville's fish and wildlife responsibilities under the Northwest Power Act and the impact of the Endangered Species Act on the entire water resources of the Federal power system in the Pacific Northwest produce a magnitude of costs to Bonneville unlike those required of other utility entities in the Pacific Northwest. Other utility entities in the region have not made available to Bonneville the nature or levels of their fish and wildlife costs.

BORROWING AUTHORITY

Mr. Myers. Of the $3.75 billion in borrowing authority provided to Bonneville, how much has been used to date of each increment originally provided, how much has been repaid, and when will the borrowing authority be depleted?

Mr. Hardy. Bonneville has a total of $3.75 billion of Treasury borrowing authority. An initial $1.25 billion was authorized in the 1974 Transmission System Act and another $1.25 billion was authorized in the fiscal year 1983 Energy and Water Development Appropriations Act. Both authorizations are usable for all Bonneville Federal borrowing purposes. An additional $1.25 billion was provided by the 1980 Pacific Northwest Power Act and is limited to conservation and renewable investments.

As of the end of fiscal year 1994, Bonneville has obligated $2.16 billion of the first $2.5 billion borrowing authority increments. Since fiscal year 1974, Bonneville has made payments of almost $1.27 billion in principal. Using the estimates in the fiscal year 1996 Congressional budget, Bonneville anticipates fully obligating this increment by the end of fiscal year 1998, a year beyond the forecast made in the fiscal year 1995 budget presented to Congress last year.

As of the end of fiscal year 1994, Bonneville has obligated $746 million of the second $1.25 billion borrowing authority increment. Since 1980, Bonneville has made payments of $410 million in principal. Using the estimates in the fiscal year 1996 Congressional budget, the increment will remain available until well after fiscal year 2000.

Mr. Myers. What steps are being taken to extend the use of the borrowing authority?

Mr. Hardy. Bonneville is exploring initiatives with its customers and constituents to reduce its level of debt financing. We are identifying reductions in capital spending through the application of a capital budgeting process. We are proposing to revenue-finance about $30 million in capital investments each year beginning in FY 1996. In addition, to the extent allowable, we are examining the shifting of costs from the Transmission and Fish and Wildlife borrowing authority to the Conservation and Renewables borrowing authority. Lastly we are considering third-party financing of capital investments when possible.

To remain competitive in the current business environment, Bonneville will vigorously pursue any additional opportunities for further reductions in capital spending that may arise.

STATE OF ALUMINUM INDUSTRY

Mr. Myers. What is the current state of the aluminum industry in the Northwest?

Mr. Hardy. The Pacific Northwest smelters are currently operating at around 72 percent of capacity. Aluminum prices rallied in late 1994, after a four-year slump. This price rally was due to a combination of strong market fundamentals, institutional fund investments, and the Brussels Memorandum of Understanding. The recent drop in prices following January's high was a result of large withdrawals by institutional fund investors. The Memorandum of Understanding is expected to erode this year, which Bonneville believes will result in higher world production levels, additional institutional fund withdrawals, and lower prices. Market fundamentals may weaken next year due to an expected slowdown in the economy. Given these pressures and uncertainties, the smelters are aggressively seeking to pare down their electric power costs. The newly deregulated power market has opened up new opportunities for the smelters to buy from alternative suppliers of power, who can offer low and steady rates to the smelters.

Although there is great short-term uncertainty, aluminum market fundamentals point to a viable aluminum industry for at least the next several years.

LOAD AND RESOURCE FORECAST

Mr. Myers. What are the latest load and resource forecasts for power in the Northwest?

Mr. Hardy. Through the year 2000, Federal system resources are forecast to be about 8,700 average megawatts, and Federal system loads are forecast to range from 9,200-9,400 average megawatts.

Mr. Myers. How has this changed from last year?

Mr. Hardy. Relative to last year's forecasts reported in Bonneville's Pacific Northwest Loads and Resources Study, the most recent published loads and resources forecast reported in the preliminary rate proposal has changed notably. Our firm load forecast increased by 300-500 average megawatts through the year 2000 due to changed assumptions regarding power sales contract purchases from Pacific Northwest public utilities and direct service industrial customers. The forecast of the direct service industries' firm load increased over last year, offset somewhat by the decrease in regional public utility contract purchases due to changes in dedicated resource assumptions and projected load losses due to competitive market conditions.

Bonneville's forecast of resources increased by 75-175 average megawatts through the year 2000. We incorporated 1994 Biological Opinion assumptions in hydro regulation studies, resulting in decreases in the forecast of hydro resources; the 1995 Biological Opinion was not available when the studies were made. Decreases in the forecast of hydro resources were offset by increases in Federal non-utility generation.

Relative to the results of last year's analysis, the loads and resources situation worsened through the year 2000 because the increase in forecast loads exceeded the increase in forecasted resources.

SCIENCE EDUCATION PROGRAM

Mr. Myers. Why is Bonneville proposing to spend $1,250,000 on science education programs in fiscal 1996.

Mr. Hardy. Bonneville's science education program activities help increase the interest in and supply of scientists and engineers in the Pacific Northwest and outside the region. This will ultimately benefit Bonneville and the country.

Mr. Myers. What types of education programs are funded?

Mr. Hardy. Funding includes $750,000 for K-12 education outreach activities and $500,000 for Junior Federal Fellowship and college cooperative education programs. Examples of K-12 programs include Fish and Wildlife Education Programs, Conservation & Resource Planning Education Programs, At-Risk Student Employment, and Science Bowls.

Mr. Myers. Is this activity an appropriate function for a Federal power marketing administration?

Mr. Hardy. Yes, it is appropriate for Bonneville to fund science education in the interests of our mission and as a responsibility of a Federal government agency. Bonneville's science education program is carried out in concert with and support of the Science Education Enhancement Act of 1991 which guides the Department of Energy's science education efforts.

Mr. Myers. Are the costs paid by the ratepayers?

Mr. Hardy. All of the costs for science education are funded from the Bonneville fund and are paid by Bonneville's ratepayers. There are no taxpayer moneys supporting Bonneville's science education activities.

LOAN PROGRAM

Mr. Myers. Please describe the loan guarantee program Bonneville is proposing in fiscal year 1996.

Mr. Hardy. The fiscal year 1996 budget proposes the use of up to $29 million in direct loan authority which was conferred on Bonneville by the Northwest Power Act in 1980. The proposed loan program is important to Bonneville's conservation reinvention. It provides for loans to customers to make investments to implement demand-side management measures, that is, energy conservation. The loans provide alternative financing options to customers acquiring energy efficiencies in the future without traditional Bonneville incentives. The loans would be repaid to Bonneville over time.

The loans to Bonneville utilities are a transition tool to aid the customer utilities in meeting unfunded conservation targets as Bonneville's rate-based conservation programs are phased out. In developing the program we asked customers what it would take to make Bonneville's conservation reinvention work and they supported the creation of a loan fund from Bonneville that could fund local conservation programs.

Bonneville is obligated to meet the Northwest Power Planning Council's Energy Plan targets for energy conservation. Direct loans provide an enabling mechanism to utilities that minimizes near-term fiscal impacts on Bonneville. The return of funds to Bonneville improves Bonneville's financial position while meeting this primary mandate to achieve energy conservation. Some utilities in Bonneville' service territory are prohibited by their State law from using internally generated funds provided by their customers to make consumer loans for conservation projects. But, they can loan out money from other sources, such as Bonneville.

COLVILLE INDIAN SETTLEMENT

Mr. Myers. Please describe the Colville Indian settlement and subsequent legislation?

Mr. Hardy. As a result of new legislation passed in October 1994, Bonneville is responsible for making payments to the Confederated Colville Tribes in settlement of a long-standing lawsuit. At the time the dam was built, the Tribes were promised a share of Grand Coulee revenues to compensate them for land that they lost as a result of the Federal Government's construction of the dam.

The legislation calls for the Federal Government Judgment Fund to make a lump sum payment of $53 million to the Tribe, and for Bonneville to make an initial annual payment of $15.3 million in FY 1996 and amounts thereafter which are tied to the actual generation of the dam and Bonneville's rates.

The legislation also calls for the U.S. Treasury to be responsible for 30 percent of the total amount paid to the Tribes. Therefore, the legislation calls for the U.S. Treasury to give Bonneville a credit for a portion of the amount of Bonneville's payments beginning in FY 2000.

Mr. Myers. How does that settlement impact Bonneville funding and the annual Treasury payment?

Mr. Hardy. Bonneville's portion of the annual payment is to be funded from Bonneville revenues. As called for in the legislation, however, the U.S. Treasury is directed to give Bonneville a credit for a portion of the amount of Bonneville's payments beginning in FY 2000.

REPAYMENT

Mr. Myers. How much was credited to Bonneville's repayment to Treasury for fish costs in fiscal year 1994, and proposed for fiscal years 1995 and 1996?

Mr. Hardy. At the end of fiscal year 1994, Bonneville recouped $18.7 million of costs expended that were allocated to the non-power purposes. Based on the latest information, the proposed recouping of non-power fish costs for fiscal year 1995 and 1996 is $60 million per year. The amount will be based on actual costs incurred and may vary from the estimate.

Mr. Myers. What is the legal authority for crediting repayment costs for activities which would normally require an annual appropriation?

Mr. Hardy: Bonneville uses section 4(h)(10)(C) of the Northwest Power Act of 1980 [Public Law No. 96-501] as its express authority for recouping mitigation costs incurred on behalf of non-power hydro project purposes. As I stated in my testimony, this in essence eliminates a cross subsidy that Bonneville has been providing other river users, and I believe, does not require an appropriation. We intend to include in future budgets an estimate of the 4(h)(10)(C) credit so that it is clearly visible to the Committee.

MITCHELL ACT HATCHERIES

Mr. Myers. Please describe the budget proposal for the Bonneville Power Administration transfer for the Mitchell Act Hatcheries.

Mr. Hardy. During FY 1996, the administration will propose legislation which would transfer funding responsibility for the Mitchell Act Hatcheries to Bonneville, and allow Bonneville to pay those costs from rate-payer generated revenues. Responsibility for funding is proposed to begin in FY 1996 at an additional cost of $14.1 million annually through FY 2000.

Bonneville's FY 1996 Congressional budget includes revenues for fiscal years 1996 through 2000 to fund the Mitchell Act Hatcheries. The additional cost of $14.1 million per year is included in the budget as a negative appropriation. Budget tables which indicate both net budget authority and net outlays include funding for the Mitchell Act Hatcheries.

If the proposed legislation is enacted, Bonneville would most likely treat the funding of the Mitchell Act Hatcheries in the same manner it treats funding for the Lower Snake River Compensation Plan Hatcheries, as an obligation and outlay under associated projects cost expense.

SOUTHEASTERN POWER ADMINISTRATION

PERFORMANCE MEASURES

Mr. Myers. Your budget last year included several performance measurements. How do your fiscal year 1994 activities rank against each measurement?

Mr. Jourolmon. The FY 1994 accomplishments for our four performance measures are as follows:

The comparison of actual to estimated repayments is minus 7 percent due to less than average water conditions.

In the comparison of rates with consumer price index, rates are slightly higher than the Consumer Price Index because of the increased wheeling charge by the Tennessee Valley Authority.

In the comparison of transmission rates with the Consumer Price Index, transmission rates have increased slightly less than the Consumer Price Index.

Southeastern had capacity outages all year. The maximum was 350 megawatts more than available reserves. Under contract provisions, no interruption credits were given to the preference customers.

PRIVATIZATION

Mr. Myers. What percent of customers would experience a significant rate increase if the system were privatized? Do any of your customers receive 100 percent of their power from SEPA?

Mr. Jourolmon. Southeastern markets capacity and peaking energy. Only a small portion of any one customer's power is provided by SEPA. As a result, the Administration's proposal to transfer Southeastern to current customers for the net present value of future revenues is not expected to result in retail rate increases.

RICHARD B. RUSSELL PROJECT

Mr. Myers. What is the status of the Richard B. Russell project?

Mr. Jourolmon. Phases 1 and 2 of the environmental testing of the Richard B. Russell pump-back units continue following the rigid guidelines imposed by the U. S. District Court. Two of the four pump-back units have been operated in both the pumping and generating modes with relatively minor fish entrainment. During this testing phase, valuable experience has been gained in the effective use of various fish deterrent devices and operational procedures.

Definitive marketing discussions must be delayed until after the successful completion of the environmental testing of the pump-back units and the District Court is satisfied that fish entrainment will not be a problem at the project.

Mr. Myers. Do you expect the pumpback feature to be operational in FY 1996?

Mr. Jourolmon. Phase 3 of the environmental testing, which includes all four of the pump-back units, is scheduled to begin in April, 1995. If the present schedule holds and the District Court accepts the Corps of Engineers proposals on protecting fish during pumping operations, the pump-back units will become commercial available by May, 1996.

Mr. Myers. Does your budget contain sufficient funds to operate this feature?

Mr. Jourolmon. There are no funds included in the budget to fund this feature. Southeastern plans for the customers to purchase pumping power directly from a utility. We will make arrangements with a commercial bank or trust fund, using preference customers' funds, to provide funding for the purchase of pumping power. The account will be replenished from funds supplied by such customers when pumping power is delivered to the preference customers.

NEGOTIATIONS WITH SOUTHERN COMPANY

Mr. Myers. What is the status of negotiations with the Southern Company for continuation of wheeling and other services for the Georgia-Alabama-South Carolina system of projects?

Mr. Jourolmon. Our existing contracts with the Southern Companies, and for the benefit of the Subcommittee Members, that includes the Georgia, Alabama, Mississippi and the Gulf Power Companies, are extended on a month to month basis as we continue negotiations. Recent negotiation sessions have been encouraging, and we anticipate having a negotiated settlement within the next few months. In the event negotiations are not successfully concluded, we will file with the Federal Energy Regulatory Commission (FERC) for a settlement, and we will pay an amount determined by FERC.

Mr. Myers. How will these additional costs be paid for?

Mr. Jourolmon. Southeastern is planning to obtain funds, where possible, by having the preference customers in the Southern Companies area pay the Southern Companies directly for transmission and control area services.

OFFICE SPACE

Mr. Myers. In your testimony last year, you referred to new office space for

Southeastern. What progress has been made?

Mr. Jourolmon. As a result of the Administration's proposal to privatize SEPA at the end of FY 1997, future office space requirements are being reviewed. At this time, we are not able to give GSA a long-term commitment on the need for office space.

Mr. Myers. Does the fiscal year 1996 budget include funding for new office space?

Mr. Jourolmon. The FY 1996 budget does not include any funding for the new office space.

IMPACT OF BUDGET CONSTRAINTS

Mr. Myers. Are any of your projects restricted from generating at full potential due to lack of maintenance?

Mr. Jourolmon. Southeastern is interested in ensuring that appropriate levels of funding are provided for operations and maintenance activities at Federal hydroelectric facilities. Beginning in 1990, numerous generating unit outages have occurred, resulting in capacity interruptions, reductions in Southeastern's revenues, and requirements for Southeastern's customers to purchase higher cost replacement capacity. The extended periods of time that the generating units have remained out-of-service is directly related to Corps of Engineers' delays in providing funds for the required repairs and maintenance. The delays in funding have resulted in higher costs for the customers. The customers must purchase expensive replacement capacity in the short-term and ultimately have to pay higher rates to Southeastern in the long-term, due to the reduction in Southeastern's revenues during the extended outages. Some of the projects in the Georgia-Alabama-South Carolina System remain de-rated in generating capability and have been in such a condition since March of 1992, awaiting sufficient funding for rewinding of the generating units.

Mr. Myers. Are your customers willing to fund additional costs for maintenance directly?

Mr. Jourolmon. The preference customers may be willing to fund some of the rehabilitation and improvements at the Corps of Engineers' projects. The preference customers may want to provide up-front financing for some of these improvements and project rehabilitations to secure a reliable allotment of power from the projects. Southeastern is considering operating with a commercial bank or trust fund to hold preference customers' funds until the Corps can expend them.

Mr. Myers. Does this include upgrades?

Mr. Jourolmon. Yes, this would include upgrades.

Mr. Myers. Southeastern does not own or operate any transmission or generating facilities, but markets the power produced from Federal hydroelectric projects throughout the Southeast. Why is it necessary for the Federal government to perform this function?

Mr. Jourolmon. The Administration has determined that it is not necessary for the Federal government to market the power at Federal hydroelectric projects and, therefore, is planning to transfer ownership out of Federal control.

PURCHASE POWER AND WHEELING

Mr. Myers. What items are included in your purchase power and wheeling activities?

Mr. Jourolmon. Southeastern Power Administration's purchase power and wheeling activity includes purchasing transmission or wheeling services from area utilities to deliver power to its customers. Southeastern also purchases limited amounts of energy to firm up the power and to provide energy for pumping purposes.

Mr. Myers. Why must the Federal government act as the banker for the purchase and resale of power for the payment of wheeling costs?

Mr. Jourolmon. The Administration has determined that it is not necessary for the Federal government to act as the banker for the purchase and resale of power and is planning to transfer function to the preference customers.

Mr. Myers. Are there other funding alternatives?

Mr. Jourolmon. To fund the purchase power and wheeling activity, Southeastern is giving consideration to several alternatives. Utilizing bill crediting, Southeastern will negotiate new contracts as they expire for providing for transmission services to be paid directly by the preference customers to the utilities providing the preference customers' services. Southeastern is also considering arranging with a commercial bank or trust fund, using preference customers' funds, to provide funding for the purchase of pumping power. The account will be replenished from funds supplied by such customers when pumping power is delivered to the preference customers. These funding alternatives have the potential of greatly reducing Southeastern's budget.

UNOBLIGATED BALANCES

Mr. Myers. Why does Southeastern continue to carryover large unobligated balances from prior years?

Mr. Jourolmon. Southeastern has had large unobligated balances carried forward from prior years as a result of lower than anticipated wheeling and purchase power buys. Also, the Carters Pump Back Project was out of service for an extended period of time reducing the need for purchasing power.

SOUTHWESTERN POWER ADMINISTRATION

RESERVOIR LEVELS

Mr. Myers. What is the current status of reservoir levels compared with average conditions?

Mr. Reeves. The total generation from the projects in Southwestern's area was 125 percent of average for fiscal year 1994 as a result of above-normal rainfall for much of the year. Generation thus far for FY 1995 has been 152 percent of average. The 24-project system was 100.5 percent full on March 13, 1995.

PRIVATIZATION

Mr. Myers. If this system is privatized, how will competing demands for use of the water system--flood control, hydropower, recreation, etc.--be accommodated?

Mr. Reeves. The operation of the projects would depend on the conditions of the sale. Under the Administration's proposal, the Federal government will retain ownership and control of dam operations. Competing demands will have to be worked out during negotiations with prospective purchasers. These negotiations would necessarily involve the power generating agency -- the Army Corps of Engineers. The Department of Energy cannot commit the Army Corps of Engineers to any specific accomodation of competing demands.

CARRYOVER BALANCES

Mr. Myers. You have had large carryover balances in prior years. Are you expecting to carryover any funds into fiscal year 1996?

Mr. Reeves. Southwestern will offset its FY 1996 budget by approximately $514,000 in FY 1994 carryover funds and prior year deobligations. Carryover balances from prior year's Purchase Power and Wheeling program have decreased significantly due to Southwestern's use of energy banks rather than appropriated funds for direct power purchases.

OPERATION AND MAINTENANCE FUNDS

Mr. Myers. Why are your operations and maintenance funds increasing by 7 percent?

Mr. Reeves. Southwestern's Operations and Maintenance activity increased by $1.3 million in FY 1996 due to a continued focus on preventative and corrective maintenance of transmission facilities as opposed to new additions normally funded in our Construction program. The Construction program activity shows a decrease of $1.58 million. Due to a large Construction program in FY 1994, Southwestern's routine maintenance was put on hold while resources were used to implement Construction activities. Southwestern has now shifted its resources back to the routine maintenance program to catch-up on the implementation of our five year maintenance schedule to assure reliability of service.

Mr. Myers. Your testimony states that you are "mandated by law to provide a variety of services and to meet legal requirements." Please explain these mandates not included in section 5 of the Flood Control Act of 1944.

Mr. Reeves. Title VII, Section 722 of the Energy Policy Act of 1992 has the greatest potential to impact Southwestern operations and priorities. This provision requires open access to the transmission system both to existing and new transmission customers. Even though the requesting customer would compensate Southwestern for an appropriate share of the costs for these services or new construction, it still may be necessary to adjust maintenance and operations schedules if the existing facility configuration is insufficient to meet customer requirements. The EPACT also requires transmitting utilities to provide the Federal Energy Regulatory Commission with current planning information on their transmission systems.

The Environmental Protection Agency has delegated to the States the authority over Federal facilities in the region. Oil/water separators tied to secondary containment structures located in the State of Missouri have been classified by the State as waste water treatment systems. Southwestern is required to obtain a State permit and to monitor these devices.

The following proposed amendments to current Federal regulations, if placed into effect as proposed, will directly affect the way Southwestern does business: Section 110 of the National Historic Preservation Act; Phase 3, Land Disposal Restrictions of the Resource Conservation Recovery Act; Missouri Voluntary Cleanup Guidelines; DOE Guidelines for Clean Air Act, Section 608; and NEPA Documentation for Threatened and Endangered Species, Wetlands, Farmland, and Cultural Resources.

EMPLOYMENT LEVEL

Mr. Myers. What is your total employment level, including temporaries and contract employees? How do these levels compare with 5, 10, or 20 years ago?

Mr. Reeves. Beginning FY 1995, Southwestern's total employment level was 265 full time personnel, Federal(196 FTE) and contractor(49), compared to 258 Federal FTE and no contract personnel in 1969. This level reflects an increase of 2.6 percent over the last 20 years. This slight increase is reflective of the 50 percent program growth Southwestern has experienced in the past two decades. Southwestern has also been given additional responsibilities in the environmental, energy efficiency, and finance areas stemming from the National Environmental Policy Act, the Energy Policy Act of 1992, and the Chief Financial Officers Act. Considering the increase in program and the additional responsibilities stemming from legislative mandates, the slight increase in Southwestern's total employment level over the last 20 years was needed.

WESTERN AREA POWER ADMINISTRATION

DEFICIT

Mr. Myers. Your annual report for fiscal year 1994 shows a $238 million deficit. What is the reason for this deficit and what are you doing to eliminate it?

Mr. Shafer. Of Western's $238 million deficit, $172 million or 72 percent is for the Pick-Sloan Missouri Basin Program. This deficit is primarily due to poor hydrogeneration, which resulted in high purchase power expenses and reduced revenues. Specifically, several years of drought reduced or eliminated "surplus" energy sales, thereby, reducing power revenues. Power purchases were required to meet contractual power deliveries, which increased expenses. In FY 1993, flood conditions reduced generation as water releases from the dams were reduced to avoid adding water to the already swollen river downstream. The net generation for 1984-88 averaged 12.5 billion kilowatt-hours. In contrast, net generation for Pick-Sloan Missouri River Basin was 8.8 billion kilowatt-hours (kWh) in 1992, 7.3 billion kWh in 1993, and 10.6 billion kWh in 1994.

Rate increases were completed each year between 1990 and 1994 to reduce the deficit. The main-stem reservoirs are now at normal storage levels, and generation is projected to be near normal in 1995 and 1996. Over 65 percent of the Pick-Sloan deficit will be repaid by 1997 and 100 percent will be repaid by 1998 upon the sale of Western.

$51 million of the deficit is for the Colorado River Storage Project. This deficit was primarily a result of an audit adjustment at the end of fiscal year 1994 which transferred investments that should have been reported as plant-in-service during previous years. This transfer increased interest-on-investment, which is considered an annual expense, and decreased interest-during-construction, which is a capital item. The resulting deficit will be repaid in full by 1997.

The remaining $15 million deficit is spread among Western's other power systems, as shown in the following table. These deficits will be repaid as indicated in the table.

(The table follows:)

PROJECT	YEAR DEFICIT IS REPAID	DEFICIT ($)MILLIONS [1]
Boulder Canyon	1998 [3]	$ (9)
Central Arizona (Navajo)		10 [2]
Colorado River Storage Project	1997	(51)
Fryingpan Arkansas	1996	(3)
Pacific Northwest-Pacific Southwest Intertie	1998 [3]	(4)
Parker-Davis	1997	(5)
Pick-Sloan Missouri Basin	1998 [3]	(172)
Seedskadee	1998 [3]	(3)
Washoe	1998 [3]	(3)
Total		$ (238)

[1] Column may not add due to rounding.

[2] Navajo short-term has $10 million of surplus revenues, including prior-year adjustments.

[3] Repaid as part of PMA sale.

REPAYMENT OF DEBT

Mr. Myers. Western has repaid $2.2 billion or approximately 37 percent of its $5.9 billion debt. Why has your percentage of repayment been declining. Do you expect this trend to continue?

Mr. Shafer. The percentage of investment repaid has been declining due to a combination of factors. Poor hydrogeneration has reduced the revenues available for repayment. At the same time, investments have been made to replace and upgrade aging power facilities, and nonpower investments, such as irrigation aid, have increased. For example, between FY 1993 and FY 1994, $0.3 billion of Western, Bureau of Reclamation, and Corps of Engineers power and nonpower investment was added to the cumulative total investment. These additional investments will not be reflected as repaid for several years. Therefore, the percentage of investment repaid decreased.

However, Western's construction program is decreasing. This decline in additional investments, coupled with rate increases and improved hydrogeneration, will ultimately result in an increase in the percentage of investment repaid. Western closely monitors the need for rate adjustments to see that needed adjustments are initiated in a timely manner to accomplish project repayment. The power marketing administrations' current repayment methodology is purposefully designed with flexibility to repay more than the planned level of investments during years experiencing good hydrogeneration and to defer payments during poor hydrogeneration.

BUDGET CONSTRAINTS

Mr. Myers. Has the operation and maintenance of Western's transmission facilities deteriorated due to budget constraints?

Mr. Shafer. No. Western continues to accomplish the operation and maintenance of our transmission facilities at least equal to industry standards. Increased deterioration of facilities due to reduced maintenance dollars has been avoided by an aggressive cost containment program and the use of improved technology in power system components and test equipment. The technology advancements have extended maintenance cycles and reduced maintenance times. Additionally, as opportunities arise, we are ordering equipment with self-diagnostic capabilities. We also share specialized equipment such as mobile capacitor banks and oil reclaimers among Area Offices where practicable.

FALCON AND AMISTAD PROJECT

Mr. Myers. The Department is proposing a new account for the Falcon and Amistad Project. Please describe why this program has been transferred to the Subcommittee's jurisdiction?

Mr. Shafer. The Foreign Relations Authorization Act, Fiscal Years 1994 and 1995, directed that a separate fund, known as the Falcon and Amistad Operating and Maintenance Fund (Maintenance Fund), be created in the Treasury of the United States. This legislation also directed that the Maintenance Fund be administered by the Administrator of Western for use by the Commissioner of the United States Section of the International Boundary and Water Commission to defray operation, maintenance (O&M), and emergency costs for the hydroelectric facilities at the Falcon and Amistad Dams in Texas. Funds for the O&M were previously included in appropriation requests of the Department of State. The program is transferred to this Subcommittee's jurisdiction because it is now a Western responsibility.

Mr. Myers. Could the Falcon and Amistad project be financed through other means than annual appropriations?

Mr. Shafer. Yes, if Act authority is provided for direct access to revenues deposited in the Maintenance Fund, the operation and maintenance of the hydroelectric facilities at these dams could be financed directly without annual appropriations.

Mr. Myers. Are mechanisms in place to accomplish this?

Mr. Shafer. Yes. The Maintenance Fund in the U.S. Treasury has been established as both a receipt and expense account. Western's financial management system could accommodate such a method of operation. We would be pleased to work with this subcommittee in this effort.

CONTINUING EMERGENCY FUND

Mr. Myers. Please describe the status of the continuing emergency fund? Was this fund used in fiscal year 1994?

Mr. Shafer. The Continuing Fund remains available for use by Western in accordance with the criteria established in the Energy Fund Act of June 26, 1948, and the Energy and Water Development Appropriations Act, 1990.

The Continuing Fund was not used in FY 1994 for an emergency. The last time the fund was used for an emergency was in FY 1993. Outlays totaled $41,166 for partial cost of repairs to the Liberty-Coolidge 230-kV transmission line at the Gila River crossing in the Phoenix Area. The damage was caused by heavy rains and subsequent flooding conditions.

Mr. Myers. Has Western used the continuing fund provided in fiscal year 1990 to be used during periods of below normal generation?

Mr. Shafer. Yes. Western outlayed $6.7 million from the Continuing Fund in 1992 to finance power purchases for the drought-stricken Central Valley Project. It has not been necessary to use the Continuing Fund for below-normal hydrogeneration conditions since then.

ENERGY PLANNING AND MANAGEMENT PROGRAM

Mr. Myers. Please describe the status of your energy planning and management program?

Mr. Shafer. The proposed energy planning and management program (EPAMP) would require the preparation and implementation of integrated resource plans by Western's long-term firm power customers, as required by Section 114 of the Energy Policy Act. Under Integrated Resource Planning (IRP), Western customers will consider both supply-side and demand-side resources as they plan to meet their resource needs.

In order to provide resource certainty in support of quality IRP, Western is proposing to extend a major portion of its hydroelectric resources to existing customers. Project-specific resource pools would be created from unextended resources for allocation of power to new customers, such as Native Americans.

Over the past year, Western has made significant progress in development of the proposed EPAMP. A draft environmental impact statement on the program was made available to the public in late March of 1994, followed by eight public hearings throughout Western's service territory. The proposed program was published in the Federal Register in August of 1994, followed by seven public meetings during the 90-day comment period.

In response to public concerns, Western has committed to the use of principles of IRP for its internal resource acquisition and transmission planning activities. Western has also adjusted its policy on marketing of power to Native Americans. Under the proposed program regulations, Western will no longer require that Native Americans create tribal utilities in order to receive power from Western.

ENVIRONMENTAL AND RECREATIONAL ISSUES

Mr. Myers. What have been the impacts of the environmental and recreational issues raised over the last several years to Western's hydropower resources.

Mr. Shafer. As a result of environmental and recreational issues raised over the past several years, there are new constraints being imposed on operations of Federal dams across the country. The impact of these changes on Western will be to reduce the nonfirm power which Western is able to sell to its customers. Provided below is a summary of the changes.

Passage of the Grand Canyon Protection Act in 1992 has impacted hydropower operations at the 1,356-megawatt Glen Canyon Dam on the upper Colorado River. The Act requires that the Glen Canyon Dam be operated "to protect, mitigate adverse impacts to, and improve the values for which the Grand Canyon National Recreational Area were established." Pending completion of an environmental impact statement, the Glen Canyon Dam began operating in a restricted mode in August 1991, using somewhat moderate flow releases, to lessen the downstream environmental impact of dam operations. A final environmental impact statement and draft record of decision were released in March 1995 with the adoption of long-term operating criteria anticipated to occur in March 1996. Western's cost to replace power resulting from new operating requirements was approximately $16 million from August 1991 to September 1994 and is projected to be $5 million in FY 1995.

Also, I will list a number of other environmental issues that are currently under study so, at this time, their impacts are unknown:

-- the Recovery Implementation Program for Endangered Fish Species;

-- the environmental impact statement on the Salt Lake City Area Integrated Projects power marketing plan;

-- the biological opinion on Flaming Gorge Dam;

-- the proposed designation of nearly 2,000 miles of the Colorado River as critical habitat for 4 species of endangered fish;

-- the fish and wildlife mitigation, protection, and restoration requirements of the Central Valley Project Improvement Act;

-- the U.S. Fish and Wildlife Services and the Hoopa Valley Tribe preparation of an environmental impact statement and report on mainstem Trinity River fishery restoration; and

-- the Army Corps of Engineers draft environmental impact statement and associated technical reports for the operation of the mainstem Missouri River dams.

APPROPRIATION SURPLUSES

Mr. Myers. DOE reprogrammed a portion of Western's fiscal year 1994 appropriations to other accounts. Do you anticipate similar "surpluses" in fiscal year 1996?

Mr. Shafer. Yes, we are anticipating savings in FY 1996. Successful customer load management activities in the Central Valley Project are reducing Western's requirement for purchase power and wheeling in FY 1996. Western will prepare and submit an FY 1996 budget amendment as soon as the amount is determined.

NAVAJO TRANSMISSION PROJECT

Mr. Myers. What is Western's proposed level of funding for the Navajo Transmission project?

Mr. Shafer. Western expended $4.8 million for preconstruction activities (studies, field data, environment studies, etc.) in FY 1990 through FY 1994 for the Navajo Transmission Project (NTP). In FY 1995, no Western-appropriated funds are being obligated for NTP. There are no funds requested for the NTP in the President's FY 1996 budget request.

SHASTA DAM TEMPERATURE CONTROL DEVICE

Mr. Myers. What is the status of the Shasta dam temperature control device?

Mr. Shafer. The Shasta Temperature Control Device is funded by the Bureau of Reclamation (Reclamation) and under the authority of the Central Valley Project Improvement Act, which designates the Shasta Temperature Control Device as one of the many projects to be funded out of the Restoration Fund. The total estimated project cost is $80 million; of that, $31 million has already been funded by the Federal Government. Fiscal year 1996 funding for the Shasta Temperature Control Device includes $0.6 million from Reclamation's appropriations request, and $11.3 million from the Restoration Fund.

On November 22, 1994, Reclamation awarded the Shasta Temperature Control Device construction contract for $63.7 million. It is anticipated that construction will begin in 1995 and will be substantially complete by September 1996.

PMA PRIVATIZATION

Mr. Rogers. What would be the total cost to the Federal government of privatizing the Power Marketing Administrations? Please provide a total amount and a brief explanation of associated costs per activity.

Mr. Nordhaus. The cost to the Federal government of privatizing the Alaska Power Administration is estimated to be $3.5 - $5.5 million. Cost estimates for privatizing the other three Power Marketing Administrations (PMAs) have not yet been determined.

The types of activity included in a cost estimate for privatizing the PMAs would be: investment advisor fees, employee separation benefits, inventory of assets, etc.

Mr. Rogers. When will the Department of Energy submit its plan on privatization of the PMAs? Please provide a brief but specific summary of the plan and associated target dates for privatization.

Mr. Nordhaus. The Administration's bill to sell the Alaska Power Administration was forwarded to the Congress on April 7, 1995.

For the privatization of Southeastern, Southwestern, and Western Area Power Administrations, the Administration plans to submit legislation on PMA privatization to Congress as soon as possible.

The Administration's proposal is to privatize the Alaska, Southeastern, Southwestern and Western Area Power Administrations between 1996 and 1998. A preferential right of purchase will be given to existing PMA firm power customers, meaning that existing PMA customers will be given the first opportunity to purchase the PMAs assets. The sales price would be the discounted net present value of the PMAs' financial obligation to the Treasury at the time of the sale. The discount rate would be the Treasury's cost of borrowing money at the time of the sale.

The estimated sales prices for Southeastern, Southwestern, and Western Area Power Administrations are based on an earlier calculation of the net present value of the PMA's financial obligation to the Treasury. The Alaska Power Administration has been included to be consistent with the budget document, but the sale price in that case is based on the previously negotiated sale price with the purchasers, consistent with the net present value concept.

The prices on the table are estimates that must be refined once more details concerning the privatization can be explored through a study. The "Net Revenues Lost" column represents the lost principal and interest payments to the Treasury in the five year (1996-2000) budget scoring window, offset by the reduction to operating outlays.

The "Net Revenue to Treasury" represents the increase in revenue the Treasury would receive in the five year (1996-2000) budget scoring window.

I will provide an insert for the record summarizing the preliminary estimates of the proceeds from the sale.

(The table follows:)

PMA Privatization

1996-2000

(all $ in millions)

PMA	Date to Privatize	Estimated Sale Price	Net Revenues Lost	Net Revenues To Treasury
APA	end of FY 1996	$ 85	($ 27)	$ 58
SEPA	end of FY 1997	909	(431)	478
SWPA	end of FY 1998	612	(136)	476
WAPA	end of FY 1998	2,863	(194)	2,669
Total		$ 4,469	($ 788)	$ 3,681

CHOICE OF PMAS TO PRIVATIZE

Mr. Rogers. Why did the Department decide to privatize some PMAs and not others? Why did the Administration not propose similar activity for the Tennessee Valley Authority?

Mr. Nordhaus. The Administration is proposing to privatize four PMAs, but not the fifth one -- the Bonneville Power Administration (Bonneville).

There are two reasons why the Administration decided not to propose privatization for Bonneville. First, unlike the other PMAs, Bonneville's debt burden is so high that it is not an attractive offering. Bonneville carries about $16 billion of debt, $6-7 billion of which is associated with three Washington Public Power Supply System nuclear plants, only one of which is complete. In FY 1994, 38 percent of Bonneville's expenses did not produce corresponding revenues. With this debt load, it is doubtful that a satisfactory price for Bonneville's sale could be developed.

Second, any potential buyer or buyers would face significant environmental cost uncertainties and risks due to the endangered species salmon issues.

Instead of privatizing Bonneville, the Administration will propose turning it into a government corporation to provide BPA the opportunity to operate in a more efficient and business-like manner.

The Tennessee Valley Authority (TVA) is not a part of the Department of Energy, so I cannot speak to that part of your question. However, I would note that TVA has more in common with Bonneville than the other four PMAs.

IMPACTS OF PRIVATIZATION ON RATES, BUSINESSES, AND SAVINGS

Mr. Rogers. Is it possible to estimate the effect that the privatization of the PMAs will have on rates in the service areas. If so, please quantify.

Mr. Nordhaus. The Administration does not anticipate any rate increases as a result of the privatization proposal.

Mr. Rogers. What will be the effect on businesses in the service areas if the PMAs were to be privatized?

Mr. Nordhaus. The Administration does not anticipate any rate increase as a result of the sale. Therefore, we do not feel that there will be any effect on businesses in the PMAs' service areas.

Mr. Rogers. What savings now and in the future will be realized if the PMAs are privatized?

Mr. Nordhaus. Savings would be gained now and in the future as the Treasury would be receiving lump-sum payments in 1996, 1997, and 1998 from the proceeds of the sales. As outlined in the President's budget request, there is an anticipated net receipt to Treasury of $3.7 billion dollars over the period 1996 - 2000.

Ratepayers of the current PMA customers will also see savings over the long term. Improved efficiencies achieved through local control and the new owners' improved ability to raise capital will lead to improved maintenance and, ultimately, lower power rates.

REPAYMENT OF DEBT

Mr. Fazio. Are the PMAs generally required to repay debt associated with the construction of hydropower facilities within 50 years, and are they adhering to that schedule?

Mr. Nordhaus. Yes. Department of Energy repayment policy for power marketing administrations requires that, unless otherwise prescribed by law, the Federal investment must be repaid within the average service life of the facilities or 50 years, whichever is less. The PMAs have made all required payments, and present rates provide for the repayment of all debt.

I would like to point out, however, that the Western Area Power Administration currently has a capitalized operating deficit of $238 million, primarily as a result of poor water conditions over the period FY 1989 - 1993. This capitalized deficit must be repaid prior to making other prinicipal payments and it incurs interest at current Treasury borrowing rates while it remains unpaid.

GENERALLY ACCEPTED ACCOUNTING PRINCIPLES

Mr. Fazio. Does your PMA employ GAAP to depreciate its property, and if so, how much accumulated depreciation on utility plants in service did you report in your 1994 Annual Report?

Mr. Nordhaus. Yes. All PMAs used the straight-line depreciation method in FY 1994, which is consistent with GAAP for depreciating its property. In the reports of each PMA's independent accountant, the auditor stated that, in the firm's opinion, the PMA's financial statements are in conformity with generally accepted accounting principles.

I will provide an insert for the record showing the total accumulated depreciation in the PMAs' FY 1994 Annual Reports.

(The table follows:)

Accumulated Depreciation

as of September 30, 1994

($1,000)

PMA	Amount
APA	$ 36,134
BPA	2,620,473
SEPA	349,658
SWPA	262,106
WAPA	1,511,430
PMA Total	$4,779,801

DELOITTE & TOUCHE REPORT

Mr. Fazio. The Alliance cites a Deloitte & Touche report prepared in January 1995 that "indicates that under GAAP reporting, WAPA lost approximately $250 million in 1993 and $130 million in 1992." Mr. Shafer, are you familiar with this Deloitte & Touche report? Do you concur with the Alliance's conclusion that, under GAAP reporting, WAPA would have lost hundreds of millions of dollars in 1993 and 1992? If this conclusion is misleading, please explain why it does not actually reflect WAPA's financial position.

Mr. Shafer. I do not know the basis for the figures cited by the Deloitte and Touche study. I have not seen the report and understand that the report is preliminary and has not been released. The amounts mentioned are not consistent with Western's financial statement for FY 1992 and FY 1993. The audited financial statements contained in Western's 1993 and 1992 annual reports, WAPA's consolidated financial statements display net revenues (positive) of $26.9 million and $6.9 million respectively.

Mr. Fazio. Mr. Jourolmon, isn't it true that Deloitte & Touche conducted the independent audit of SEPA in 1993, and didn't they issue a report that confirms that SEPA's financial statements were "in conformity with generally accepted accounting principles"?

Mr. Jourolmon. Yes, Deloitte & Touche did conduct the independent audit of SEPA in 1993, issued an unqualified opinion, and found SEPA's financial statements to be in conformance with "generally accepted accounting principles".

BENEFITS OF FEDERAL HYDROPOWER

Mr. Fazio. The Alliance report also claims that only "6 percent of the population will be affected by the sale of these (PMA) assets." Is this accurate? Approximately how many million Americans receive the benefit PMA power, either directly or indirectly?

Mr. Nordhaus. About 48 million Americans receive the benefits of Federal hydropower marketed by the Alaska (300,000), Southeastern (19,000,000), Southwestern (6,000,000), and Western Area Power Administrations (22,900,000). Although the PMAs provide the majority of these rate payer's with only a small portion of the power they consume, these 48 million people are about 20 percent of the American public. This total excludes people who benefit from the Bonneville Power Administration because the Administration is not proposing that Bonneville be sold.

However, Bonneville meets about 50% of the power needs of nearly 3 million people within the Pacific Northwest. Bonneville also provides on average about 1.8 percent of the load of our California utility customers. These Californian utilities serve approximately 26 million people, which is two-thirds of the total population of California.

Bonneville also provides indirect payments to the people served by investor-owned utilities within the Pacific Northwest through the Residential Exchange program established by the Pacific Northwest Electric Power Planning and Conservation Act of 1980. The Residential Exchange program reaches about 6 million people served by participating private utilities.

Mr. Fazio. This same report claims that rural electric cooperatives and municipally owned electric utilities pay the PMAs "1 to 2 cents per kWh for power which they sell for 4 to 9 cents per kWh." Is this accurate?

Mr. Nordhaus. It is true that a number of public power systems purchase PMA power at 1 to 2 cents per kWh wholesale and sell power to their end-use customers at rates ranging from 4 to 9 cents per kWh retail. However, the difference between wholesale purchase prices and retail sale prices is not profit but, rather, reflects other costs incurred by these nonprofit organizations. These other costs include: the cost of power generated at their own facilities or purchased from non-PMA suppliers, transmission and distribution costs, metering costs, and general administrative costs such as salaries and overhead.

Generally, the PMAs do not allow their power to be resold at wholesale by the purchasing utilities, except member-based associations who resell to their members, such as generaton and transmission cooperatives. The contracts the PMAs have with their customers contain a provision prohibiting this.

PMA PRIVATIZATION

Mr. Chapman. Concerns have been raised that the sale of the PMAs would reduce revenues to the Federal Treasury, diminish competition and increase electric rates for millions of Americans. Can you comment on these concerns?

Mr. Nordhaus. I am aware of these concerns, but believe they are unfounded as regards the Administration's privatization proposal.

First, the Administration's proposal does not reduce the value of net revenues received by the Federal Treasury. The Administration is committed to a sales price for PMA assets that equals the net present value of the annual stream of interest and principal payments that the Treasury would otherwise receive. Using the long-term Treasury borrowing costs as the discount rate for this payment stream ensures that the Treasury and Federal taxpayers, are kept whole.

Second, competition in the electric utility industry should be unaffected, or even increased, by the Administration's privatization proposal. This is because the Administration's concept is to give the existing firm power customers of the PMAs first preference to buy the PMA assets. The Administration believes the generally small public power utilities who purchase PMA assets may be better able to compete because these utilities can improve the cost effectiveness of the PMA assets once they are removed from burdensome Federal administrative rules. In addition, these utilities are under local control and can ensure that the PMA assets are responsive to the needs of their customers.

Finally, electric rates for the existing firm power customers of the PMAs should not change if these customers buy the PMA assets, as the Administration proposes. This is because a sales price based on the net present value of the PMA's financial obligation to the Treasury, coupled with operating efficiencies, should allow local utility customers of the PMAs to buy PMA assets without incurring any additional net expenses.

Mr. Chapman. Your testimony states that your proposal includes preferential right of purchase to the existing customers and a sales price that is based on the existing revenue stream. Can you expand on these provisions of your proposal and how they will keep the electric rates from increasing?

Mr. Nordhaus. The President's proposal is to offer a preferential right of purchase for these PMAs to their existing firm power costumers. The sales price would be the discounted net present value of the PMA's financial obligation to the Treasury at the time of the sale. The discount rate would be the Treasury's cost of borrowing money at the time of the sale.

The estimated sales prices for Southeastern, Southwestern, and Western Area Power Administrations are based on an earlier calculation of the net present value of the PMA's financial obligation to the Treasury. The Alaska Power Administration has been included to be consistent with the budget document, but the sales price in that case is based on the previously negotiated sales price with the purchasers, consistent with the net present value concept.

The prices on the table are estimates that must be refined once more details concerning the privatization can be explored through a study. The "Net Revenues Lost" column represents the lost principal and interest payments to the Treasury in the five year (1996-2000) budget scoring window, offset by the reduction to operating outlays.

The "Net Revenue to Treasury" represents the increase in revenue the Treasury would receive in the five year (1996-2000) budget scoring window.

The Administration plans to submit PMA privatization legislation to Congress as soon as possible so that a detailed privatization proposal can be developed in consultation with Congress and other interested parties.

I will insert a table for the record summarizing the preliminary estimates of the proceeds from the sale.

(The table follows:)

PMA Privatization

1996-2000

(all $ in millions)

PMA	Date to Privatize	Estimated Sale Price	Net Revenues Lost	Net Revenues To Treasury
APA	end of FY 1996	$ 85	($ 27)	$ 58
SEPA	end of FY 1997	909	(431)	478
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WAPA	end of FY 1998	2,863	(194)	2,669
Total		$ 4,469	($ 788)	$ 3,681

TIMING OF PMA PRIVATIZATION LEGISLATION

Mr. Chapman. When does the Administration plan on submitting its legislative proposal to Congress to privatize the four PMAs?

Mr. Nordhaus. The Administration plans on first submitting PMA privatization legislation to Congress as soon as possible so that a detailed privatization proposal can be developed in consultation with Congress and other interested parties.

PRIVATIZATION LEGISLATION AND RURAL ELECTRIC COOPERATIVES

Mr. Chapman. Will the Administration be working with rural electric cooperatives in drafting its final legislative proposal?

Mr. Nordhaus. The Administration has been meeting with a number of interested parties, including representatives of rural electric cooperatives, as it develops its PMA privatization proposal. The views of many groups are being given serious consideration as the Department drafts the legislation.

Statement of Robert R. Nordhaus
General Counsel
The Department of Energy
Energy and Water Development Subcommittee
Committee on Appropriations
U.S. House of Representatives
March 16, 1995

Mr. Chairman, thank you for inviting me to testify before your Subcommittee today on the Administration's Fiscal Year 1996 budget proposal to privatize the Southeastern, Southwestern and Western Area Power Administrations (PMAs). The Administrators of all the PMAs-- Alaska, Bonneville, Southeastern, Southwestern and Western will deliver separate testimony on their FY 1996 budgets.

The Administration is committed to giving a preferential right of purchase to the existing firm power customers of Western, Southwestern and Southeastern; our final legislative proposal will reflect this commitment. The preliminary sales prices established for each PMA in the Administration's budget are based on an estimate of the net present value of the principal and interest payments that the Treasury expects to receive from each PMA. We believe that privatization that includes preference and a sale price based on the existing revenue stream will make it possible to increase the efficiency and responsiveness of the PMAs to local concerns without resulting in any rate increase.

There are three objectives the Administration will accomplish by privatizing these PMAs. First, non-federal entities can operate and provide investment capital for these systems in a more cost-efficient manner than the Federal government. Burdensome Federal procurement and personnel rules are a major impediment to the efficient operation of the PMAs. There is also a serious concern over the lack of Federal funding to invest in upgrading and rehabilitating the generation facilities. Allowing capital investments in system upgrades and repairs, free from the existing fiscal constraints of the Federal appropriations process, could solve this problem. These changes will assure the continued efficient and effective utilization of these valuable resources.

Second, privatization will localize control and make these PMAs more responsive to the needs of their customers and other local interests. This Administration is committed to reducing the size of government and allowing local decisions to be made by the people most affected.

Third, privatizing the PMAs will accelerate repayment of federal debt. The financial benefit of privatization is that it will convert long-term PMA debt, currently repaid to the Federal Treasury over 50 years, into a one-time payment that will reduce the deficit in 1997 and 1998. The Administration will be asking for changes in the budget scoring rules so PMA privatization, and other asset sales, will "score" as budget savings.

The Administration proposes to sell the Southeastern Power Administration by the end of 1997 and the Southwestern and Western Area Power Administrations by the end of FY 1998. The revenues from these sales as contained in the President's Budget are based on an estimate of the net present value of the principal and interest payments that the Treasury would currently receive. The following table summarizes the projected sale proceeds and revenue losses which would result from this proposal for the period through FY 2000.

PMA Privatization
(all current $ in millions)

PMA	Date to Privatize	Estimated Sale Price	Revenues Lost thru FY 2000	Net Revenues To Treasury
APA	end of FY 1996	$ 85	$ -27	$ 58
SEPA	end of FY 1997	$ 909	$ -431	$ 478
SWPA	end of FY 1998	$ 612	$ -136	$ 476
WAPA	end of FY 1998	$ 2,863	$ -194	$ 2,669
Total		$ 4,469	$ -788	$ 3,681

In any privatization proposal, the Administration is committed to giving preference to the existing firm power customers of the PMAs. The Administration also considers the employees and contractors of these organizations as a valuable asset and will work with the purchasers to assure a stable workforce and smooth transition from Federal control.

The combination of giving preference in the sale to current customers and a sale price of the net present value of the PMA debt should provide the benefits of privatization, such as improved efficiency and local control, without any negative impact on ratepayers.

There are many details that must be examined and addressed with any privatization proposal. The PMAs are comprised of numerous systems and subsystems in particular river basins. In many cases it is likely that the most practical way to privatize will be to sell each river basin power system to the customers that presently receive firm power from that system, rather than selling a PMA as a whole.

Selling the PMAs does not involve selling the Army Corps of Engineers and Bureau of Reclamation dams from which the PMAs market power. It is our intention to sell only the power output of these dams and the transmission systems and other assets owned by the PMAs; this would have no effect on the complex operations of multi-purpose dams and the many other important needs that they serve such as water supply, flood control, navigation and recreation. However, we are examining options which would allow the sale of the power generation equipment as well as other options which will assure that the new owners have the ability to make certain that generator maintenance and upgrades are performed, free of the existing federal budget constraints.

Privatizing the PMAs will be a very complex transaction that will require considerable study and very close consultations with Congress, PMA customers, affected communities and others. The Administration plans to send up a general bill directing the study of PMA privatization as soon as possible. This will allow the necessary detailed studies to be performed in order to develop final legislation. Such legislation, which may consist of several discrete pieces and take months to develop, will be provided to the Congress later this year.

Mr. Chairman, this concludes my remarks. If you or any members of the Subcommittee have any questions I would be happy to answer them.

Statement of Michael A. Deihl
Administrator
Alaska Power Administration
Department of Energy
FY 1996 Appropriations Hearings

Mr. Chairman and Members of the Subcommittee, I am pleased to present Alaska Power Administration's (APA) budget request for fiscal year (FY) 1996 and discuss our programs and accomplishments.

MISSION

APA is responsible for operation, maintenance, transmission, and power marketing for the Eklutna and Snettisham hydroelectric projects. Eklutna is a 30 megawatt (MW) installation providing roughly five percent of the power used in Anchorage and the surrounding areas. Snettisham is a 78 MW installation and the main power source for Juneau, Alaska's capital city.

PROGRAM OVERVIEW

APA is requesting new appropriations of $4,260,000 to continue operations, maintenance and power marketing programs in FY 1996 for the two Federal hydroelectric projects in Alaska. In addition, we are requesting $542,000 in operation and maintenance services obtained through net billing, for a total FY 1996 program of $4,802,000.

The request provides continued adequate funding for the full year pending authorization and completion of the proposed APA divestiture.

ALASKA POWER ADMINISTRATION PROGRAMS

APA's request assumes a staffing authorization in FY 1996 of 35 full-time equivalents (FTE). Approximately half the permanent positions are in our Juneau Headquarters Office and the balance stationed at the two project sites.

Each project has its own authorizing legislation providing guidance for power marketing and repayment and providing authority for managing and operating the projects.

Although the Eklutna and Snettisham Projects were authorized and developed as essentially single-purpose power projects, important developments have occurred for fisheries enhancement, public recreation, and municipal water supply with non-Federal interests covering investment and operation costs.

BUDGET SUMMARY

	FY 1995	FY 1996	DIFFERENCE
Operation and Maintenance	$ 6,494,000	$ 4,260,000	-$ 2,234,000
Emergency Fund	200,000	200,000	0
Net Billed	1,130,000	542,000	-588,000
Prior Year Unobligated	362,359	0	-362,359
New Budget Authority	**$ 8,186,359**	**$ 5,002,000**	**-$ 3,184,359**

REVENUES AND REPAYMENT PROGRESS

Actual revenues for FY 1994 were $10.2 million, less than the forecasted $10.6 million. The FY 1994 revenues were less than planned due to warmer than normal weather in the Juneau market area accounting for lower than forecasted firm energy sales. APA re-evaluated and adjusted the future sales forecasts for the Snettisham Project. The new forecast reflects the past 20 year trends in weather and sales experience in the Juneau market area. FY 1996 revenues are expected to approach $11.8 million.

For FY 1994, revenues covered annual costs with $6.6 million applied to interest and principal payments. The principal payments of $2,171,019 were up 5.7% over planned.

Overall, the two projects have repaid $42.2 million, or 20.5% of the total Federal investment including replacements of $206.1 million.

Our current system status and the recorded sales to date indicates that we should meet our FY 1995 forecasted power sales.

POWER MARKETING

Based on the results of rate sufficiency studies in FY 1994, new wholesale power rates for the Eklutna Project were placed in effect on an interim basis in FY 1994 to maintain satisfactory repayment progress. Final approval of these rates was received in early FY 1995. Rate sufficiency studies in FY 1995 for the Snettisham Project show that a rate increase is required to maintain project repayment. Activities to develop new rates are underway, and new rates are expected to be in place by the end of this fiscal year.

Over the past 18 months, APA has renewed long-term wholesale firm power contracts with all its customers. In addition, a wholesale contract for surplus power from the

Snettisham project was signed last month. With this action, all energy from both APA projects is fully allocated.

NET BILLING

In FY 1994, the total net billing utilized in support of APA projects was $1,168,764. Snettisham Project total was $1,100,064. This included substation operators for $237,036, routine transmission line maintenance at $117,043, Snettisham transmission line landslide for $663,482, $13,299 for additional line maintenance, and $69,204 to investigate a serious transmission line ground fault problem that caused eleven brief area-wide outages. The total net billing utilized in support of the Eklutna Project transmission line maintenance was $68,700.

The FY 1995 net billing amount of $1,130,000 includes $530,000 for normal operations and maintenance activities at both projects, $556,601 of to-date Snettisham landslide work expenses and an estimated $55,000 for remaining minor site cleanup.

The FY 1996 request for $542,000 net billing authority reflects a return to normal operations and maintenance of the facilities.

EKLUTNA UNIT WINDING REPLACEMENT PROGRAM

The FY 1996 program includes $400,000 to complete the Eklutna Unit Winding replacement program. This work includes final re-assembly of the generator units and needed associated mechanical and electrical acceptance testing. The units cannot be returned to in-service status without this work being performed. The Eklutna unit winding replacement program will begin in the fourth quarter of FY 1995 with contract award and will continue through FY 1997. Completion of the replacement windings is necessary for continued long-term reliable operation of the plant and is vital for meeting the 50 year repayment requirement.

EKLUTNA POWER TRANSFORMER REPLACEMENT PROGRAM

The $678,000 Eklutna transformer contract that was awarded in FY 1994 is progressing on schedule with an installation targeted for the summer of FY 1995. Completion of this replacement program will help to ensure another 40 years of reliable energy deliveries from the Eklutna Project.

NATIONAL PERFORMANCE REVIEW RECOMMENDATIONS

In support of DOE's Strategic Plan and the National Performance Review recommendations, APA has developed a Strategic Plan that guides the agency direction towards a quality management-based organization. APA continues to streamline and reorganize into a customer-focused agency. APA has reduced supervisory positions by

70%, acquisition specialists positions by 75%, and eliminated several "no-value" in-house reporting requirements. These efforts are improving the quality and efficiency of our mission by increasing employee and customer involvement, reducing unnecessary oversight and eliminating layers in the decision making processes by empowering the employees.

TRANSMISSION LINE

In the fourth quarter of FY 1994, the Snettisham transmission line reliability was threatened by a major landslide which required relocation of one tower and modification of an adjacent tower. The relocation of the threatened tower out of the landslide danger zone, modification of an adjacent tower, and the conductor re-installation emergency repair were completed in FY 1995. The original plans called for completion of this work in FY 1994, but was delayed into FY 1995 due to extremely difficult remote site conditions, hazardous weather conditions that prohibited helicopter site access, and several unforeseen challenges such as the discovery of an underground river at the base of the relocated tower foundation. The tower was successfully relocated outside of the landslide danger zone before winter weather prohibited site access.

MAINTENANCE

All facilities remain in generally excellent condition reflecting adequate funding for maintenance and replacements and continued success in those programs.

Progress has been made on the backlog of deferred maintenance requirements. The backlog has been reduced from $580,000 in FY 1993 to $430,000 in FY 1994, and to an estimated $340,000 in FY 1995. The FY 1996 request includes funding to reduce APA's maintenance backlog to $230,000 by performing right-of-way clearing and repairing concrete in the Crater Lake power tunnel.

ENVIRONMENTAL, SAFETY AND HEALTH

We are making good progress on our environmental and safety programs. In FY 1994, over 70,000 hours were worked without any serious accidents, lost time-reportable injury and this trend has continued into FY 1995.

No environmental or safety violations were identified at APA facilities by regulatory authorities. As in past years, APA operations are not required to operate under air and water quality permits requirements. Hazardous discharges to the air and water are either minimal (non-regulated) or non existent. The promotion of pollution prevention values is a highlight of APA's environmental quality program. APA has operated both facilities (Snettisham and Eklutna) as conditionally exempt small quantity generators, which are exempt from most hazardous waste requirements.

A purchase order was issued in FY 1994 to clean up spilled non-PCB transformer oil at the Anchorage Substation in the amount of $23,700. When the area was excavated and tested, it was found that a much larger area would need to be excavated and filled than originally planned. The additional work is estimated to cost $150,000. A formal competitive bid contract is planned for award so the work can be completed in the FY 1995 construction season.

APA effectively implemented a reuse and recycling program which included the recycling of 19,000 pounds of batteries, office white paper and computer paper, and aluminum cans.

APA continues to work with our customer utilities in conservation efforts. In FY 1994, our joint programs to replace oil and wood heat with renewable hydroelectric power saved an estimated 350,000 gallons of heating oil and provided an additional $137,000 for project repayment. In addition, APA cooperated with a customer utility on a long-term energy conservation plan to develop system-wide conservation opportunities.

SMALL BUSINESS PROCUREMENT

During FY 1994, APA awarded 95% of its procurement expenditures available to the private sector to small businesses. This was the fourth straight year that APA has exceeded a 90% or better small business award percentage.

PERFORMANCE INDICATORS

APA's program is measured by seven performance indicators. The data for each indicator is collected at its own frequency (i.e. some can only be obtained monthly, quarterly or annually). Two indicators measure generation and transmission systems reliability, four measure financial status, and one tracks the effectiveness of our safety program. This data is compared with past data to insure APA is performing in a prudent businesslike manner and the performance indicators remain appropriate. The results are published in APA's annual report. APA will continue to look for improvements.

FUTURE OBJECTIVES

We will continue to emphasize sound operation and quality maintenance of the hydroelectric generation and transmission facilities to ensure the continuity of long-term power delivery to our customers. Over the next three years, replacement of the major electrical components at the aging Eklutna Project will be the priority.

We will continue to support actions to bring APA facilities into full compliance with environmental, safety, and health laws and regulations.

We will continue to cooperate with customers to promote conservation objectives with emphasis on expanding use of the surplus renewable energy from the Snettisham Project displacing fuel oil and reducing woodsmoke pollution.

We will continue to review existing rate structures, load forecasts, and sales contracts to assure that revenue levels from both projects fully cover the repayment requirements.

Based upon quality management principles, we will continue to seek ways to increase our efficiency in a businesslike manner, therefore meeting our customers' needs at the lowest cost possible.

While APA will continue to work with the Department, our customers, and members of Congress to seek authorization for divestiture of the facilities and closeout of the agency, we will continue to plan, operate, and market the power to protect the Federal investment for the benefit of the ratepayers and the taxpayers.

DIVESTITURE

Divestiture legislation was introduced into the 103rd Congress, passed by the House and reported out of the Senate Energy and Natural Resources Committee, but the session adjourned before final action could be taken. APA and DOE continues to work with members of the 104th Congress in obtaining authorization.

Although the Department of Energy and the Alaska Power Administration are continuing to pursue the completion of the sale of APA assets to the State of Alaska and a consortium of local interests, continued operation and maintenance of the projects while under Federal ownership remains the priority. The FY 1996 budget request assumes that sale authorization will be obtained and the sales completed by the end of FY 1996, but final agency closeout will not occur prior to the end of FY 1997. APA's FY 1996 request provides funds required to continue our normal work for the full year; it does not provide funds as may be necessary for closeout activities.

Mr. Chairman, that completes my testimony. APA appreciates the support this Committee has provided in the past, and we look forward to working with you in the future.

At this time, I would be glad to answer any questions you may have.

Statement of Randall W. Hardy

Administrator

Bonneville Power Administration

Fiscal Year 1996 Appropriations Hearing

Mr. Chairman and Members of the Subcommittee, it is a pleasure to come before you to present the FY 1996 budget for the Bonneville Power Administration (Bonneville). The Subcommittee's attention and support continue to be essential as we work to address the challenges we face in the Northwest.

The Bonneville Power Administration is at a historical pivot point that will, depending on our response, determine the future of this agency. After five-and-a-half decades of virtually no competition, Bonneville now finds itself in a deregulated, highly competitive marketplace. At the same time, new decisions on Columbia Basin endangered salmon will influence how the hydro system is operated. Bonneville's response is to move decisively to manage the challenges these events pose.

Today, I will first discuss the competitive environment we are facing and the tools we are using to remain competitive. I will then discuss the increasing financial pressures of added costs. Finally, I will comment on our current financial situation as of the end of the first quarter of FY 1995, our current budget, and some of the more important events now affecting Bonneville.

For 58 years, Bonneville has been a "can do" agency, adapting to the Northwest's changing needs, from rural electrification to establishing one of the leading energy conservation programs. Bonneville's ability to change remains its greatest strength. This attribute takes on new importance today as Bonneville undergoes what may be its most crucial transformation.

Bonneville's ability to adapt successfully is fundamentally important to the Northwest economy and environment. Our low-cost, non-polluting power has brought new business and industry into the region. In the rural Northwest, Bonneville power has transformed arid expanses into rich croplands. This same reliable power is a major factor in the region's economic expansion.

A productive and growing Northwest economy depends on Bonneville. A financially healthy Bonneville is also key to funding the region's fish and wildlife enhancement and energy conservation efforts. In today's competitive utility marketplace, Bonneville must first succeed as a business if it is to serve its wide-ranging regional mission and meet its Federal responsibilities.

COMPETITIVE MARKETPLACE

Utility deregulation has fostered a strong independent wholesale electric power production industry nationwide. In the Northwest, as elsewhere, this industry offers Bonneville customers an alternative. This competitive climate was accelerated with the National Energy Policy Act of 1992, which opened transmission access, not only within the Northwest, but also to utilities among regions.

The costs of new power sources have dropped sharply in recent years, causing the gap between Bonneville's costs and the cost of alternative power sources to narrow dramatically. Ten years ago our price advantage was over 400 percent. We believe that recently this gap has been narrowing rapidly as independent power producers and others enter the Northwest wholesale market. I have attached a number of charts and graphs to my testimony to elaborate on my testimony. Please see Attachment 1 on the avoided cost of alternative generation. In addition, uncertainties about Bonneville's future costs, especially salmon restoration costs, have led some customers to conclude Bonneville might not be competitive in the very near future. That could be true were Bonneville to take no action.

Two years ago we took a hard look at the position of our agency. Following business-as-usual, our projections, using current rate levels, showed Bonneville's costs would exceed revenues, annually, by $600 million in just ten years. There was no question that we would have to change the way we do business. Bonneville's Competitiveness Project is the agency's vehicle for creating the necessary change. Bonneville believes the key to its success is for it to be a customer-focused, cost-conscious, results-oriented, market-driven government organization.

It is important to note that the overall goal of Bonneville's Competitiveness Project is to allow Bonneville to more efficiently and effectively accomplish its mission as outlined in organic statute, not to change the mission itself. Bonneville remains committed to the integrity of the region's environment and natural resources, to conservation as the energy resource of first choice, and to providing high quality transmission and other services. Our competitiveness has a direct relationship to our ability to fulfill our mission, including regional utility, social and environmental responsibilities.

There has been a perception by some that Bonneville's focus on customers is an abrogation of our fish and wildlife and other environmental responsibilities. If anyone has a stake in Bonneville's continued success, it is those who are dedicated to preserving the region's fish, wildlife, conservation and renewable resource programs. Bonneville's customers have alternatives to Bonneville power. Without revenues from the power side, it will be difficult, if not impossible, to continue to fund the region's fish, wildlife, conservation and renewables programs. A healthy economy and a healthy environment go hand in hand. One supports the other. A viable Bonneville is critical to the entire region -- environmental concerns as well as business and industry.

SUSTAINING REVENUES

To ensure that we can meet all our regional responsibilities, we believe we must move to stabilize rates to keep our existing customers and attract new revenues as well. Bonneville is looking at how different price increases affect Bonneville's ability to keep customers and thus sustain revenues. We believe this sustainable revenues analysis, based on actual offers being made to our customers, shows that because our customers can choose alternative power suppliers at competitive prices, even small rate increases can lead to a loss of existing customers sales. Total revenues may increase somewhat, especially in the short run with small rate increases less than 5 percent. However, Bonneville believes that as rate increases move much above 5 percent, this changes. Larger rate increases could modify Bonneville's revenue base by driving existing customers away. Our customers have many alternatives to turn to for their power needs. Some, like Clark Public Utilities, Grays Harbor Public Utility District, and Snohomish Public Utility District, have already decided to diversify their power purchases from sources other than Bonneville. Many other customers are being pursued by investor-owned or public utilities, independent power producers, power brokers, and marketers. As of March 1, 1995 Bonneville has received formal requests from six utilities to decrease their current purchases from Bonneville by 472 megawatts. This reduction may result in lower power purchases and lower valued product sales, but final decisions are yet to be made.

An irony of the marketplace is that some of our competitors are also our customers and exchanging utilities under the Residential Exchange Program. Virtually all of our customers, both utilities and industries, are being approached by our competitors. For example:

> Washington Water Power is proposing a 10-year arrangement to serve about half of the load of Inland Power and Light about 27 average megawatts, Bonneville's second-largest co-op customer. The price is potentially competitive with Bonneville's current priority firm rate and escalates at 3 percent a year.
>
> The City of Canby has signed a similar contract for service to most of its 13 average megawatt load with Portland General Electric.
>
> Idaho's Kootenai Electric Co-op has been offered by ENRON a contract to serve all of Kootenai's 27 average megawatt load at prices which start near Bonneville's current priority rate.
>
> In addition, a number of Northwest generating utilities and other West Coast suppliers, including PacifiCorp, BC Hydro, PGE, San Diego Gas and Electric (through its Enova subsidiary), and the Eugene Water and Electric Board, in addition to independent power producers, are offering to serve current Bonneville customers.
>
> Most of these offers have a similar pattern: they start at or below Bonneville's current wholesale rate of 27 mills and escalate by a fixed percentage for five to ten years. They thus start as extremely competitive prices and offer predictability for several years.

As more customers leave, the amount of revenue produced declines. It's clear we need to consider our competitive position when we set our prices.

PROSPECT OF THE CALIFORNIA MARKET

Some critics have suggested that Bonneville is overstating the competitiveness issue. If Bonneville cannot compete in the Northwest, they have said, there is always the California market. The assumption that the California market is our salvation is well-intentioned, but does not reflect current reality.

California today has less expensive or the same alternatives to Northwest power, and it no longer enjoys the economic boom that once supported large extra-regional power imports. The reality is that the same low-cost independent providers that are competing for Bonneville's customers in the Northwest also are competing in the California markets.

As a result of slow load growth, several California utilities also have substantial power surpluses well past the year 2000. These surpluses are depressing prices to historic lows, as utilities opt to sell power at prices below fully allocated cost rather than letting such resources sit idle.

It's not a case of Bonneville's 3-cent power versus a California utility's 8-cent power. Bonneville is competing against other generating utilities and independent suppliers in that market who also offer 2.5 to 3-cent power and against prices forced down by the current surplus, a condition likely to persist for several years.

That does not mean there are not effective and positive arrangements to be forged with California. We are moving to maximize the working arrangements between the Northwest and California to provide more seasonal energy exchanges and sales. The competitive market has reduced but certainly not eliminated the economic value of these arrangements. The statutory limit on marketing further reduces the value of these arrangements.

BONNEVILLE COMPETITIVENESS IS CRITICAL

Bonneville's competitiveness is critical to the Pacific Northwest economy. The agency provides nearly half of the electric power and three-fourths of the high-voltage transmission in a very electricity-dependent region.

Bonneville's competitiveness is critical to its customers because the competitiveness and survival of many of the 150 utilities and large industrial customers the agency serves in the region are closely linked to Bonneville's rate levels. Likewise, business and industries serviced by these utilities depend on an economic power supply.

Bonneville's competitiveness is critical to the environment because Bonneville funds conservation activities, and we presently invest roughly $300 million per year on fish and wildlife (not including additional fish mitigation measures recently proposed by the Northwest Power Planning Council, U.S. Fish and Wildlife Service, or National Marine Fisheries Service), in addition to tens of millions for clear air, clean water, and hazardous waste cleanup.

Further, Bonneville's competitiveness is important to the nation's taxpayers because of the annual payments Bonneville plans to make to the U.S. Treasury. For FY 1996-2000, Bonneville's projected annual Treasury obligation is on average about $860 million.

COMPETITIVE TOOLS

Bonneville has three tools to stay competitive: controlling costs, improving services, and increasing revenues from a variety of sources. We have proposed a Business Plan to restructure our entire business approach. The plan is our guide for adjusting to the new environment by managing financial risks, reducing agency costs, and increasing our customers' satisfaction.

In late February, all of Bonneville's key executives met to assess agency marketing and business strategies. We concluded that escalating competition in the marketplace is getting tougher and will continue to get tougher before the playing field levels out. We agreed that in order to meet the competition, further cost reductions would be needed, and we have the tools, the talent, and the will to do it. We further concluded that our overall marketing strategy outlined in the Business Plan is sound and we will continue to keep the course.

CONTROLLING COSTS

We are continuing to take aggressive actions in managing our costs. Thanks to internal cost management, we avoided triggering an interim rate adjustment last October despite a third year of very poor water conditions.

Despite significant and unexpected new costs for power purchases related to drought and fish mitigation--$500 million more than budgeted in the last three years, Bonneville's total operating expenses stayed level for the last three years.

Cost cutting and efficiencies have resulted in reductions of about $240 million a year on average from Bonneville's planned operating expenses for fiscal years 1996-2000. Please see Attachment 2 for a comparison of total operating expenses from the FY1995 Congressional Budget Submission and the 1995 Rate Case data. Preliminary spending levels for 1995 Rate Case data includes updated assumptions and more cost reductions than are included in the FY 1996 Congressional Budget. These cuts will total at least $1 billion by the end of the decade.

As the competition gets tougher and market prices drop, we recognize that even more stringent steps will be needed to close the gap between expenses and revenues. To the extent possible, over the next five years, we will seek an additional $1.3 billion in cuts--this is an average of an additional $250 million annually. These additional cost reductions are expected to be included in the final Business Plan set for release in June.

By the end of this month we will have reduced our workforce by about 350 Bonneville employees from the time we initiated the Competitiveness Project. We expect to reduce Bonneville contractors by about 200 by the end of FY 1995. We are on target to meet our goal of reducing the overall workforce by 1,000 workers by the end of FY 1997. This overall 20 percent reduction is divided equally between contractors and Bonneville employees. It is likely that the $1.3 billion cost reduction goal will further increase this number.

Further examples of cost-cutting and efficiency include: terminating two partially completed nuclear plants; in cooperation with the Bureau of Reclamation, improving Grand Coulee Dam generation efficiency, thereby adding revenues in power sales; altering a major maintenance project; early cleanup of the Ross Complex Superfund Site; and negotiating an agreement in principle to resolve delivery of the Canadian Entitlement downstream benefits under the Columbia River Treaty, thus saving alternative resources costs and the costs of building a new transmission line. Regarding additional cost cutting, all elements of the budget are being considered. In particular, we are looking at resource acquisition projects.

Further, and as a result of recent management decisions, all current generating resources on line and under development are being reviewed in order to achieve savings of about half their costs. In addition, transmission capital investments will be significantly reduced.

Regarding Washington Nuclear Project No.2, (WNP-2) preliminary analysis indicates, that given decommissioning costs of about $450 million, it is significantly more cost-effective to manage WNP-2 costs down to 25-27 mills in the near term. In addition, reliability analysis shows the plant is important for fall-winter capacity. However, should the plant fail to manage to cost targets, termination will be re-examined.

REINVENTION/IMPROVING SERVICE

Bonneville has completely reorganized its work force to focus on customer service. Prior to the re-organization, we had no sales force. Now the agency is mobilized around account executives who have direct contact with individual customers and who are empowered to respond quickly and creatively. The feedback from our customers has been overwhelmingly positive about this new service-oriented focus.

As part of the Administration's FY 1996 proposal to reinvent government, the Department of Energy is preparing legislation to make Bonneville a wholly-owned government corporation under the Government Corporation Control Act. This would increase Bonneville's flexibility over personnel, procurement, financial, budget, and litigation functions to allow Bonneville to compete more effectively in electric power markets. Bonneville has already obtained administrative relief from significant barriers in these areas as a National Performance Review reinvention laboratory. This legislation would make permanent the relief obtained administratively as well as relieve the agency from additional administrative burdens which are statutory in nature.

IMPROVING REVENUES

Bonneville's Draft Business Plan identifies several means to protect and increase revenues. Cost cutting is not the sole means to close the revenue gap. Bonneville is committed to building revenues through enhancing current products and existing markets, as well as seeking new markets. By unbundling products and services, we can offer custom-tailored packages and ensure that customers pay only for goods and services they need, rather than for one bulk product. At the same time, Bonneville's marketing department is developing new products and services that will benefit customers and enhance our revenues.

Initially, Bonneville proposed instituting tiered rates as a competitive tool, however, in light of the rapidly evolving marketplace and customer concerns, has decided to temporarily shelve tiered rates. Three key factors contributed to this initial decision, which we expect will be confirmed in contract negotiations. First, the market itself. Prices have collapsed to the point where the difference between tiers is insignificant. Second, a major goal of tiering is to send a market signal to invoke energy conservation. It is now clear that, even without tiering, customers are moving to develop conservation programs. We are confident that the Northwest Power Planning Council's Regional Power Plan conservation targets can be achieved. Finally, given current conditions, the complexity associated with implementing tiered rates appeared to be a disincentive for doing business with Bonneville and at odds with our objective to stay customer focused. This decision responds directly to our customers and new market realities.

Steps outlined in the Draft Business Plan, which we now expect to finalize in June, are essential to maintaining our competitive position. Failure to act will lead to significant rate increases over the next decade. If we lose customers and revenues, we jeopardize our ability to fulfill legislative mandates which include our broader commitments to fish and wildlife, energy conservation, renewable resource development and other Northwest values, and meet our annual obligation to the U.S. Treasury of about $860 million on average for FY 1996-2000.

SALMON RESTORATION

We believe the costs of restoring depleted salmon is one of the major factors in defining whether Bonneville remains competitive. Restoration of salmon stocks is possibly the most difficult issue confronting the Northwest. Over the past 15 years, Bonneville has incurred costs exceeding $2 billion for all of the fish and wildlife mitigation programs. In the last four years, these aggregate annual costs, including opportunity losses, have more than doubled, from $150 million to about $350 million. Currently, about 1 of every 10 dollars of Bonneville's operating expenses for FY 1995 is targeted for fish and wildlife expenditures. Please see Attachment 4 on BPA Fish & Wildlife Investment. This Administration supports developing healthy Columbia Basin salmon stocks and maintaining a financially healthy Bonneville.

Bonneville's annual fish and wildlife investment estimate for FY 1996, including purchase power and foregone revenues, ranges from about $280 to $355 million, depending on water conditions. It does not take into account additional fish mitigation measures recently proposed by the

Northwest Power Planning Council, U.S. Fish and Wildlife Service, or National Marine Fisheries Service. The 1994 Columbia River Basin Fish and Wildlife Program adopted by the Council in December 1994 and the Biological Opinion issued by the National Marine Fisheries Service earlier this month on operation of the Federal Columbia River Power System call for increased augmentation of flows during juvenile fish migration, increased spill, and additional structural changes at hydroelectric projects to potentially improve fish passage. All of these efforts result in increased expenditures or lost revenues by Bonneville. They could add approximately $100 million to $200 million in annual costs. Please see Attachments 4 and 5 relating to such costs. This would result in total fish and wildlife expenditures of about 13 to 14 percent of Bonneville's total operating expenses.

FOCUSING ON FISH RESULTS

Bonneville is moving ahead to meet its commitment to the region's fish and wildlife. We are forging creative exchanges and power arrangements with other regions, developing innovative water agreements, and implementing changes in hydroelectric operations that will maximize fish survival and minimize costs.

This is occurring despite a prolonged drought that has compounded the salmon crisis, giving us less water to work with. In each of the last three years, we have had to import more electric power than we export.

For some time, the lack of definitive biology has been an obstacle in salmon recovery efforts. Bonneville is actively carrying out fish restoration measures and assuring that results be monitored and evaluated. Ultimately, this will allow us to prove the effectiveness of measures and increase the base of scientific knowledge, thus providing a benefit to all involved parties.

CURRENT FINANCIAL STATUS

Bonneville's financial performance over the past several years is a testament to the uncertainty and volatility of the hydro-based environment under which we operate. The early years of the nineties were times of positive net revenues and a strengthening financial position. The last several years have challenged Bonneville as never before.

When I last appeared before this committee, Bonneville was projecting in its FY 1995 Congressional budget a financial reserve level at the end of FY 1995 of $351 million, which was a decrease of $284 million from the $635 million that had been projected in the FY 1994 budget. This year's Congressional budget projects a final reserve level for FY 1995 of $87.1 million. This downward trend has been due to the long-term impact of the drought conditions, projected low aluminum prices, and actions we are initiating to protect and restore endangered species of salmon. As of the first three months of FY 1995, Bonneville is estimating year end reserves of $169 million due to improved stream conditions and increased aluminum prices. This reserve projection, however, does not take into account fish mitigations costs that will be paid in the early months of FY 1996, or potential additional fish costs.

BONNEVILLE TREASURY PAYMENTS

In keeping with this Subcommittee's direction, one of our most important priorities is to assure that Bonneville's payments to the U.S. Treasury are made in full and on time. During FY 1994 Bonneville made its full annual Treasury payment of just under $700 million for the eleventh straight year.

At the close of FY 1994, Bonneville's cumulative principal and interest cash payments on the taxpayer's investment in the Federal Columbia River Power System totaled about $9 billion, of which $6.29 billion has been for interest and $2.61 billion has been for principal. The total Federal investment yet to be repaid as of the end of FY 1994 was $10.1 billion.

In spite of the difficulties we continue to experience, we anticipate, based on our end of First Quarter FY 1995 estimates and receipts, being able to make our FY 1995 Treasury payment of over $1 billion in full and on time. About $156 million of this payment results from the early retirement of debt with receipts from the sale of capacity to non-federal participants in the Third Alternating Current Intertie.

DEBT FINANCING STRATEGIES

Through the Draft Business Plan, Bonneville is exploring initiatives with its customers and constituents to reduce its level of debt financing in order to both delay the exhaustion of the borrowing authority caps and improve Bonneville's debt-equity position. The initiatives are to identify additional reductions in capital spending through the application of a capital budgeting process; revenue finance about $30 million in capital investments each year beginning in FY 1996; to the extent allowable, shift costs from the Transmission/Fish and Wildlife borrowing authority to the Conservation borrowing authority; and utilize third-party financing of capital investments when possible.

The Senate Committee on Appropriations, in its 1995 report on the Energy and Water Development Appropriation Bill, requested that Bonneville present a preferred strategy for rectifying its high degree of financial leverage. Bonneville addressed this concern through the development of the capital spending initiatives mentioned above and through reductions in capital spending developed in its Draft Business Plan. The draft plan and the FY 1996 Congressional Budget submittal included a reduction in capital spending of about 32 percent for the period FY 1996-2002, compared to the FY 1995 Congressional Budget submittal. To remain competitive in the current business environment, Bonneville will vigorously pursue any additional opportunities for further reductions in capital spending that may arise.

FISCAL YEAR 1996 BUDGET IN BRIEF

Since its programs are funded by sales of power and associated services, reimbursements, and proceeds of bond sales to the Treasury, Bonneville has not requested or received annual appropriations. Bonneville's FY 1996 budget estimates total obligations of $3,496 million and capital transfers/debt reduction of $200.8 million.

In support of Bonneville reinvention goals, the agency has modified portions of the expense side of its budget structure to simplify programs and more closely align programs to the responsible organization structures. The budget has also been summarized in the old structure to assure continuity with the Congressional Committees during the transition period. Structural changes to Bonneville's capital budget program include combining Transmission System Development with Transmission System Replacements to create a unified Transmission Services program. The environmental capital components of the former Transmission and Replacement Programs have been combined with Fish and Wildlife capital investments to establish a comprehensive Environmental Fish and Wildlife program. Marketing, Conservation and Production incorporates Energy Conservation and Renewable Resources investments. Operating expense program structural changes include combining the traditional Energy Resources, Power Marketing and Scheduling into a combined Marketing, Conservation and Production. Transmission Services expenses combine System Maintenance and Operations with Engineering.

The following table provides detail under the new structure for fiscal years 1994 through 1996:

(Dollars in Millions)

CAPITAL INVESTMENTS	FY 1994 Actuals	FY 1995 Estimate	FY 1996 Estimate
Marketing, Conservation & Production	108.1	153.4	84.2
Transmission Services	192.0	199.6	223.1
Associated Projects	22.2	26.1	25.3
Environment/Fish & Wildlife	34.6	40.7	32.1
Capital Equipment	12.8	13.4	13.3
Capitalized Bond Premiums	15.6	14.6	0
SUBTOTAL CAPITAL OBLIGATIONS	385.3	447.8	378.0
Borrowing Authority to Finance Capital Obligations	385.3	447.8	378.0
Borrowing authority To Finance Other Obligations	(44.9) [1/]	201.5[1/]	(270.4) [1/]
TOTAL BORROWING AUTHORITY	340.3	649.3	107.6
Expensed and Reimbursable	2,908.4	3,024.9	3,118.0
Capital Transfers	172.7	502.2	200.8
BONNEVILLE TOTAL	3,466.4	3,974.9	3,696.8

[1/] Borrowing authority to finance other obligations represents the use of or the building up of deferred borrowing.

The Department of Energy budget overview displayed net budget authority for Bonneville. The table below portrays how those numbers are derived from borrowing authority and offsetting collections (dollars in millions):

	FY 1994 Actuals	FY 1995 Estimate	FY 1996 Estimate
Appropriations Transferred to Other Accounts (Mitchell Act Hatcheries Funding)			(14.1)
Total Borrowing Authority	340.4 [1]	649.3 [1]	107.6
Spending Authority from Offsetting Collections (Adjusted)	2,904.3	2,904.0	3,402.5
Total Budget Authority	3,244.7	3,553.3	3,496.0
Offsetting Collections	(3,077.0)	(3,406.2)	(3,603.3)
Net Budget Authority	167.7	147.1	(107.3)

From 1937, when it was created, through FY 1994, Bonneville has returned about $11 billion in cash payments to the Treasury for interest, amortization, and operations and maintenance of the Federal facilities of the Federal Columbia River Power System. During FY 1996, we anticipate paying $747.1 million to the Treasury, of which $200.8 million will be applied to the principal on debt owed to the taxpayer, $411.9 million will be interest, and the balance of $134.4 million will reimburse the Treasury for appropriations provided to the Army Corps of Engineers, the Bureau of Reclamation, and the U.S. Fish and Wildlife Service for annual hydroelectric and fish hatchery facilities operation and maintenance expenses. In addition to its payment to the Treasury in FY 1996, Bonneville will make an initial annual settlement payment directly to the Confederated Tribes of the Colville Reservation of about $15.3 million, pursuant to the Confederated Tribes of the Colville Reservation Grand Coulee Dam Settlement Act, Public Law 103-436.

Due to the capital intensive nature of Bonneville's role as a wholesale electric utility, reliable and cost-effective sources of capital are critical to the success of Bonneville's mission. A vital factor to this success in the next decade will be Bonneville's ability to respond in a timely and flexible manner to unforeseen risks and new opportunities, while also providing for program and rate stability. To be successful, Bonneville will need to maintain reliable and cost-effective capital funding through the U.S. Treasury. Using current capital program estimates, the borrowing authority limit established by the 1974 Federal Columbia River Transmission System Act ($1.25 billion) and increased by the 1983 Energy and Water Development Appropriations Act (an additional $1.25 billion, for a total of $2.5 billion), will be reached during FY 1998, absent further action. This borrowing authority may be used for all Bonneville investments, including new transmission line development and system replacements, fish and wildlife facilities, and direct funding of Bureau of Reclamation and Corps of Engineers additions, replacements and improvements. An additional amount of borrowing authority was established by the 1980 Pacific Northwest Power Planning Act to fund conservation and renewable energy investments ($1.25 billion, for a total Bonneville borrowing authority limit of $3.75 billion). Using current conservation capital program estimates, this limit will not be reached until after FY 2000.

Almost one third ($1,011.8 million) of Bonneville's FY 1996 budget is earmarked for the gross cost of the Residential Exchange Program. The 1980 Pacific Northwest Power Planning Act established the residential exchange in order to extend the benefits of the Federal power system to all residential and small farm electric power consumers in the Pacific Northwest. The gross cost of the Residential Exchange Program is offset by revenues from the exchanging utilities of $808.0 million, resulting in an estimated $203.8 million net cost of the Residential Exchange Program in FY 1996.

The FY 1996 budget also provides $158.1 million in direct obligations for transmission services; $79.9 million for environmental and fish & wildlife activities; $73.5 million for conservation resources; and $265.3 million for power marketing, scheduling, and spot power purchases.

MITCHELL ACT HATCHERY FUNDING

Legislation that modifies 16 U.S.C. 755-757, is proposed to authorize Bonneville to fund the operation and maintenance of "Mitchell Act" facilities through the transfer of funds to the National Oceanic and Atmospheric Administration (NOAA). Currently, the NOAA is responsible for funding these facilities. Under this change, the region is provided an increased role in the management of these hatchery facilities in order to better protect fishery resources affected by dam construction. The additional cost of $14.1 million per year for FY 1996-2000 is included in the President's Budget as a negative appropriation transfer to NOAA. Revenue estimates have also been assumed to increase to cover these proposed additional costs.

DIRECT LOANS FOR CONSERVATION

As part of reinvention, Bonneville is reaffirming its conservation goals and substantially changing the way it approaches acquiring conservation. The Draft Business Plan supports the Northwest Power Planning Council's goal for regional cost-effective conservation and focuses on decentralizing the region's conservation efforts by 1996. Much of the direct responsibility for meeting the Northwest Power Planning Council's conservation goals will shift to our customers. A direct loan program is an important transition tool for meeting the Northwest Power Planning Council's conservation goal and for helping to assure Bonneville's competitiveness. The loan program will provide a return of funds to Bonneville for its conservation services while at the same time helping utilities meet their conservation targets established in the Northwest Power Planning Council's Plan. Part of the conservation goal will still be met by Bonneville funded programs that aim for electricity savings on a broad scale.

Bonneville has included in this budget provisions in our appropriations language markup approving access to our authority to issue direct loans. This authority was granted in the Pacific Northwest Power Planning Act, which gave Bonneville $1.25 billion for conservation and renewable resource loans and grants. Bonneville has issued direct loans in the past and, since this is a pre-existing authority, Bonneville believes, based on preliminary contacts with the OMB and CBO, that issuing loans once more will not pose budget deficit scorekeeping problems for the Congressional committees. To assure planning certainty for conducting the Conservation program, Bonneville has included appropriations language in the budget to allow $29 million in conservation loans during FY 1996.

PERFORMANCE MEASURES

Included in the FY 1996 Congressional Budget Submission are seven performance measures based on those measures included in the agency's FY 1994 Annual Management Report. They address the key areas of Bonneville's business, including 1) fulfillment of fish and wildlife responsibilities, 2) status of Treasury repayment, 3) meeting customer load, 4) transmission system performance, 5) system safety, 6) Bonneville conservation resource costs and 7) rate competitiveness. Bonneville is continuing to evaluate and refine its business strategies, objectives and success indicators as a fundamental part of its Competitiveness Project.

OTHER SIGNIFICANT EVENTS

POWER SALES CONTRACTS

Bonneville's customers want more tailored contracts and they want simplicity in both rates and contracts. We are committed to provide this. We are moving away from the complicated "omnibus" power sales contracts of the past.

Negotiations with customers on long-term power sales contracts began in September, with customers and interest groups participating in the discussions. Although tiered rates have temporarily been put on hold, unbundled products are being introduced and customer needs are being addressed in the light of the new business environment. Proposed agreements in principle have been developed for most major issues, and a draft summary of the proposed contract principles and key issues should be ready for comment soon. Bonneville intends to offer new contracts by early fall, to be effective in October 1996. Customers who prefer to continue to purchase power under their existing contracts may do so until those contracts expire in 2001.

1995 RATE CASE

Bonneville is on a course to stabilize its rates through the end of the decade. It is increasingly apparent that customers value stability as well as competitive price. Bonneville will make a major commitment to five-year rate stability at price levels consistent with our preliminary rate proposal. However, due to poor water conditions, added generation expenses and increased salmon recovery costs, we have announced a 5 percent proposed rate increase for 1996-97. This increase is needed to give us a reasonable probability of making our Treasury payment and building financial reserves. Key factors affecting our rates include the protracted drought, increased fish costs, generation debt service and additional generation costs.

Bonneville is offering customers what we believe to be an innovative expanded approach in its new rate case. Recognizing that many customers put a premium on price stability, Bonneville is offering customers a choice of a two-year rate schedule or a five-year rate schedule. While prices may be different, both will be competitive with the market. Bonneville has reviewed the proposals competitors have put before customers and is prepared to offer products and services that are not only price competitive, but also more reliable and more stable.

Bonneville is well aware that in the new marketplace, the highest rates do not necessarily generate the most revenue. Now that our customers have alternatives, it is clear that as our prices go up, Bonneville customers have the option to move to other suppliers. It would make little sense to set rates so high that customers are driven away. That would impair our ability to meet our costs, including those related to our fish and wildlife and conservation obligations.

LOOKING TOWARD A HEALTHY FUTURE

Bonneville's response to market pressure will be a critical issue as we move forward. We are not idle--rather we are taking aggressive actions to remain competitive. Of paramount concern will be finding ways to stabilize costs to keep the agency financially viable. To the extent our competitiveness is threatened, we will need to join with others to find innovative ways to achieve this goal.

If the uncertainties Bonneville faces seem large, they are definitely not insurmountable. Bonneville started two years ago to change direction. Today, we are well down the path to meeting the challenges posed by competition.

Thanks to an excellent and dedicated work force, support from the Department of Energy, as well as useful advice from customers and others, Bonneville is moving toward its future aggressively. The Draft Business Plan, corporate reorganization, downsizing, cost cutting, the potential for becoming a government corporation, and program reinvention are all concrete moves to ensure Bonneville remains a viable and valuable contributor to the Pacific Northwest well into the 21st century.

The actions we have taken in the last two years and will complete in 1995 are major steps toward a new Bonneville--one that is leaner, faster, more flexible, and more service oriented--both toward customers and our social obligations.

The facts are that our costs are going down and our work force is being reduced. We are responding quickly to customer needs. We are committed to becoming a cost-conscious, results-oriented and market-driven organization. And, we are committed to effectively meeting our environmental obligations.

I am confident that the Bonneville that will emerge from our current competitiveness and reinvention activities will be a stronger, healthier agency that will be well positioned to deal with the challenges of the future. I look forward to our continued good relationship with this Subcommittee as we experience this change process together.

In the final analysis, we must do whatever it takes to meet the market, including even more aggressive cost cutting, development of new markets, and securing assistance with costs from the Administration. These are major steps in what will be a long and difficult transition, but steps that we must take to succeed in today's new, intensely competitive utility marketplace.

Thank you for the opportunity to testify today.

CHART ATTACHMENTS:

Attachment 1	Avoided Cost of Generation vs. BPA Average Rate
Attachment 2	Total Operating Expenses
Attachment 3	Bonneville Projected Operating Expenses - FY 1995
Attachment 4	BPA Fish & Wildlife Investments
Attachment 5	1995 Biological Opinion Costs to BPA

Statement of Leon Jourolmon,
Acting Administrator for
Southeastern Power Administration
Department of Energy
Fiscal Year 1996 Appropriations Hearings

Mr. Chairman and Members of the Subcommittee:

I appreciate the opportunity to appear before you to present the fiscal year (FY) 1996 budget request for the Southeastern Power Administration (Southeastern). I will summarize the major program areas of the request and discuss some of our accomplishments.

SOUTHEASTERN'S MISSION

The Southeastern Power Administration, located in Elberton, Georgia, markets surplus hydroelectric power in 11 southeastern states. These projects are constructed and operated by the U. S. Army Corps of Engineers. Southeastern has no transmission lines and accomplishes the delivery of power by wheeling agreements with power utilities in the area that have the necessary transmission facilities.

FISCAL YEAR 1996 BUDGET

The FY 1996 appropriation request of $19.8 million requested for operation and maintenance, and purchase power and wheeling, is a decrease of $2.6 million from the FY 1995 base level. The total program requirement of $29.9 million includes the availability of unobligated balances carried forward of $10.1 million.

Our FY 1996 budget request reflects a staffing level of 41 full-time equivalents (FTE). A comparison by activities of the FY 1996 budget with the amounts available in FY 1995 follows:

BUDGET REQUEST SUMMARY

	FY 1995	FY 1996	Difference
Operation and Maintenance	$ 3,292,000	$ 3,472,000	$+ 180,000
Purchase Power and Wheeling	27,249,000	26,430,000 1/	- 819,000
Use of Unobligated Balances	-8,110,000	-10,059,000	-1,949,000
TOTAL BUDGET AUTHORITY	$22,431,000	$19,843,000	$-2,588,000

1/ Includes planned unobligated balances of $10,059,000

OPERATION AND MAINTENANCE

In FY 1996, $3.472 million is requested for the Operation and Maintenance costs of the power system. These funds provide for the negotiation and administration of wheeling and power sales contracts; development and review of rates to assure repayment of power costs; scheduling the generation of power and supervision of power deliveries; administering the Integrated Resource Program; and direction and support of Southeastern's power marketing program. This amount represents a $180,000 increase over the amount available in the current year.

PURCHASE POWER AND WHEELING

The major portion of the budget request, $26.4 million, is for the Purchase Power and Wheeling activity and represents a decrease of $819,000 from the amount available in the current year. Purchase power and wheeling costs are considered operating expenses in the power marketing program and are repaid to the Treasury from collected Southeastern power revenues.

Southeastern has contracted with area utilities that have transmission facilities connected to the projects to deliver the power to the preference customers. Southeastern agrees to compensate the utility for the transmission service provided. In Georgia, some preference customers compensate these transmission agencies directly.

POWER SYSTEMS

Southeastern's projects are grouped for marketing purposes into four independent systems. The Georgia-Alabama-South Carolina System markets power to customers located in Georgia, Alabama, North Carolina, South Carolina, Mississippi, and Florida.

The Cumberland System power is marketed to customers located in Tennessee and in portions of Mississippi, Kentucky, Alabama, Georgia, Illinois, and North Carolina.

Power from the John H. Kerr and Philpott Projects, located in the Roanoke River Basin in Virginia, is marketed to customers in Virginia, North Carolina, and one customer in South Carolina.

The Jim Woodruff Project is located on the Apalachicola River on the Georgia-Florida state line. All dependable capacity available at the Project is sold to preference customers in western Florida.

A new project, Stonewall Jackson, energized late in fiscal year 1994, is marketed to a customer in West Virginia.

RICHARD B. RUSSELL PROJECT

The environmental testing of the Richard B. Russell pump-back units continues following rigid guidelines imposed by U. S. District Court for the District of South Carolina (located in Charleston, SC). Two of the four pump-back units have been operated in both the pumping and generating modes with relatively minor fish entrainment. During these tests valuable experience has been gained in the effective use of the various fish deterrent devices and operational procedures.

Environmental testing of all four pump-back units is scheduled to begin in April 1995 and completed by October 1995. The Corps will then request that the District Court allow the project to be operated in the pumping mode. It is anticipated that the projects will be commercially available by May 1996.

Southeastern will begin marketing discussions when the environmental testing of the pump-back units is successfully completed and the Court is satisfied that fish entrainment will not be a problem at the project.

POWER SCHEDULING

The transition in the benefits from the investor-owned utilities to the preference customers with regard to transmission capabilities and generating resources during the term of the present contracts has evolved into a need for Southeastern to schedule the power deliveries to the preference customers in a real-time manner. The methods and procedures for the scheduling of the hour-by-hour delivery of federal power to the power customers are presently under study by a team composed of personnel from the Corps of Engineers, Southeastern, and the preference customer's group. Present negotiations with the Southern Companies indicate a need for implementing the scheduling activity at the expiration of the existing contracts in the Southern Company service area.

POWER REVENUES, REPAYMENT, AND RATES

Power Revenues

Southeastern presently markets power from 23 multiple-purpose projects to 294 power purchasers. Gross revenues for FY 1996 are estimated at $182 million, reflecting the sale of 3,092 megawatts of installed capacity with 7.8 billion kilowatt-hours of energy.

Repayment of Investment

Southeastern established rates to repay all costs that are allocated to power. Southeastern has repaid $468 million of the $1.5 billion invested in plant facilities. Southeastern also has paid $820 million in interest on this investment. Southeastern is currently on schedule with its repayment.

Power Rate Adjustments

Power rates for the Kerr-Philpott System have been approved on a final basis by the Federal Energy Regulatory Commission (FERC) through September 30, 1996. Rates for the Georgia-Alabama-South Carolina System have been approved on a final basis by the FERC through September 30, 1998. Power rates for the Cumberland Basin System have been approved on a final basis by the FERC through June 30, 1999. Southeastern has proposed an extension of rates for the Jim Woodruff Project that would be effective September 20, 1995. The rates are currently in the public involvement process, and will be submitted to the Department of Energy for approval on an interim basis in May.

PERFORMANCE INDICATORS

Southeastern's budget request included performance indicators. These indicators measure the financial, operating and rate performance of the Agency.

Due to high variability of water, Southeastern shows large fluctuations between actual and planned revenues. In 1994, Southeastern's percent variance of actual from planned principal payments to Federal investment was -7%. This ratio was the result of below average streamflow conditions.

Performance indicators were prepared separately for transmission, capacity, and energy. Transmission rate decreases in the Cumberland and Kerr-Philpott Systems resulted in the composite performance indicator staying well below the Consumer Price Index Rate of Increase. In 1994, restructuring of the Cumberland rates caused the composite energy rate and composite capacity rate indicators to increase at a slightly higher rate than the Consumer Price Index.

LITIGATION

During August 1991, six customers in South Carolina filed suit against Southeastern in U.S. District Court requesting the court to declare illegal Southeastern's energy surcharge contained in its 1990 approved rates for the Georgia-Alabama-South Carolina System, as applied to these customers. These six customers (five cooperatives and South Carolina Public Service Authority) had declined to participate in a voluntary short-term rate increase during 1989, while 168 other customers in the system participated in the voluntary rate increase earlier than allowed by their contracts. The short-term rate change was required to offset the effects of extensive droughts in the southeast and escalating Corps of Engineers operation and maintenance costs. The energy surcharge contained in those rates was to collect the portion of the costs not recovered from these six customers and the costs were fully collected by September 1993. The parties have filed Motions for Summary Judgment, which were argued in October 1992, and a ruling by the District Court is expected at any time. Defense of this litigation is being coordinated with the Department of Justice.

STATUS OF WATER CONDITIONS

Fiscal year 1995 began with a continuation of heavy rainfall that marked the second half of FY 1994. Lake levels at all projects in the four systems were at or above rule curve at the beginning of FY 1995. Normal rainfall for the remainder of FY 1995 will more than ensure adequate water supply to meet contract requirements.

As of mid-February 1995, the Kerr-Philpott and Georgia-Alabama-South Carolina Systems are on or above their normal winter reservoir elevation levels. In the Cumberland System, due to recent heavy rainfall in the basin, elevation at several projects has risen from extremely low levels to normal winter levels. Elevation at Center Hill remains low, approximately 5 feet below rule curve, due to maintenance at the project.

STRATEGIC PLANNING

Southeastern considers its strategic planning efforts to be a significant part of our program. The plan is modified to ensure that we keep track of action plans in achieving our vision, accomplishing our mission, preparation of NEPA documents, and addressing issues of national importance. Our plan covers a five-year period and assists us in short and long-term planning efforts with the Department of Energy, our customers, the Corps of Engineers, and other government agencies. We will also use it as an aid in insuring efficient energy use.

POWER MARKETING POLICY IMPLEMENTATION

A new Georgia-Alabama-South Carolina System Marketing Policy was issued on December 28, 1994. The policy was formulated in compliance with the requirements of the Administrative Procedures Act with full public participation as a part of the revision procedure. Southeastern is currently negotiating new contracts or contract amendments with existing and potential customers under terms of the new policy.

A Cumberland System Power Marketing Policy was issued on August 5, 1993. After issuance of the policy but prior to negotiating contracts under the policy, one of the preference customers in the Tennessee Valley Authority's (TVA) service area announced that it planned to solicit bids for a new power supply contract. TVA could make a bid to provide the service, but the preference customers would accept the best bid tendered. The preference customers requested that it be assigned an individual allocation of Government power which it could take with it should it withdraw from the TVA system. Southeastern is considering having a power marketing policy to encompass all systems to study the ramifications and problems associated with a preference customer withdrawing from the a system with an allocation of Southeastern preference power.

INTEGRATED RESOURCE PLANNING

General Program Activities

Southeastern has expanded its involvement in energy efficiency and integrated resource planning (IRP) by continuing to hold workshops and conferences involving customer groups, their constituent organizations and key members of other industries. Southeastern has actively supported and participated in the development of the advancement of IRP in public power programs. The goal of this program is to assist the nation's publicly and cooperatively owned utilities to provide low cost, reliable, efficient utility service to our customers by supporting the advancement of sound strategic business and resource planning practices that address the opportunities and uncertainties of competition and recognize the diversity of planning environments and needs.

PARTNERSHIPS

Southeastern continued to take the lead in fostering communications with our customers through two previously established partnerships - the Southeastern Federal Power Alliance, established in 1991, and Team Cumberland, established in 1992. Both of these alliances continue to meet on a regular basis to exchange information regarding their visions and promote their strategies to meet their goals. Members of these teams include representatives of Southeastern, the Corps of Engineers, and preference customers. Representatives from these two partnerships have gotten together on a summit alliance that includes the Corps of Engineers at the Headquarters office in Washington. This has broadened the scope of our partners from the local to national level.

TOTAL QUALITY

The Total Quality Process began at Southeastern in 1991. All of Southeastern's associates have received and continue to receive extensive training to become familiar with team building and process improvement techniques. Several process improvement teams have been established to recommend improvements in various areas of the agency. Our goal is to achieve quality through the promotion of constant improvements in our processes and systems and to constantly improve services to our customers through empowered associates. Using quality teams, we at Southeastern have re-invented our agency to meet DOE and National Performance Review goals.

FUNDING ALTERNATIVES

A major budget problem in the Southeast is acquiring funds at a time when the costs of services that Southeastern is procuring are significantly increasing. In addition, the Corps of Engineers is having trouble obtaining funds to improve and rehabilitate the projects. Southeastern is planning to obtain funds, where possible, in the future by having the preference customers pay the utilities directly for as many services as possible. We are currently negotiating with Georgia Power Company, Alabama Power Company, Mississippi Power Company, and Gulf Power Company (Southern Companies). This means that the increase in Southern Companies' costs will be handled by asking the preference customers in the Southern Companies area to pay the Southern Companies directly for transmission and Control Area Services.

Southeastern is giving consideration to bill crediting. This has the potential of greatly reducing Southeastern's budget. As contracts expire, Southeastern will negotiate new contracts providing for transmission services to be paid directly by the preference customer to the utilities providing the preference customer's services.

Southeastern also purchases power for pumping operations. In order for the customers to purchase pumping power directly from a utility, we will arrange with a commercial bank or trust fund, using preference customers' funds, to provide funding for the purchase of pumping power. The account will be replenished from funds supplied by such customers when pumping power is delivered to the preference customers. In no event will any of Southeastern's receipts from sale of its power be deposited in such account, inasmuch as Southeastern's authority, Section 5 of the Flood Control Act of 1944, 16 U.S.C. 825s, requires that Southeastern's receipts be deposited into the Treasury as miscellaneous receipts.

These Budget changes are reflected below:

	Transmission	Purchased Power	Net Billing	Total
Present Budget	29,958,000	6,533,000	9,242,000	27,249,000
1996	31,925,000	6,080,000	11,575,000	26,430,000
1997	23,438,000	6,585,000	12,079,000	17,944,000
1998	17,825,000	585,000	12,089,000	6,321,000
1999	18,558,000	585,000	12,787,000	6,356,000

In addition, preference customers could fund some of the rehabilitation and improvements at the Corps of Engineers' projects. There are some improvements and rehabilitations the Corps has not been able to fund because of higher priorities. The preference customers may want to provide up-front financing for some of these improvements and project rehabilitations to secure a reliable allotment of power from the projects. Southeastern is considering operating with a commercial bank to hold preference customers' funds until the Corps can expend them.

PRIVATIZATION

As part of the Administration's proposal to reinvent the Department of Energy, Legislation will be proposed by the Department of Energy to privatize Southeastern. The Administration believes the purpose of the power marketing administrations has been achieved and that these functions should now be performed by non-Federal entities.

The proposal will provide customers protection against significant rate increases and will be developed after active and careful consultation with Congress and other interested parties.

The President's budget assumes that the sale of Southeastern will be completed by the end of FY 1997.

This concludes my statement, Mr. Chairman, and I would be happy to answer any questions that you may have.

Biographical Notes -- Leon Jourolmon

Acting Administrator, Southeastern Power Administration

Department of Energy

Mr. Jourolmon was named Acting Administrator of the Southeastern Power Administration effective February 14, 1995. He has been employed at Southeastern since 1980. Prior to assuming the duties of Acting Administrator, he served as Assistant Administrator for Finance and Marketing. His division was responsible for rates, accounting, budget, customer interaction, contract administration, and integrated resource planning. He is also a member of Southeastern's negotiating team.

Prior to his employment with Southeastern, Mr. Jourolmon was employed as a supervisory public utilities specialist at the Bonneville Power Administration in Portland, Oregon.

Mr. Jourolmon holds a bachelor of science degree in accounting from Portland State College, and a masters of business administration from Georgia State University. He is a member of Beta Gamma Sigma, the honor society for collegiate schools of business.

Mr. Jourolmon was born in Knoxville, Tennessee, on October 9, 1940; is married with three children; and is active in many civic and community organizations in Elberton, Georgia, where he resides.

Statement of Forrest E. Reeves
Acting Administrator, Southwestern Power Administration
Department of Energy
FY 1996 Appropriations Hearings

Mr. Chairman and Members of the Subcommittee:

It is a pleasure to represent Southwestern Power Administration (Southwestern) before this subcommittee and we appreciate the opportunity to present our budget request for fiscal year 1996. Southwestern looks forward to working with this subcommittee and its new Chairman.

MISSION

As part of the Energy Resources business in the Department of Energy's Strategic Plan, Southwestern's primary mission is to market surplus Federally generated hydroelectric power, operate a safe and reliable transmission system, and encourage energy efficiency for the benefit of the region. We operate and maintain 1,380 miles, or 2,220 kilometers, of high-voltage transmission lines and 24 substations throughout a six-State region. Southwestern's headquarters is located in Tulsa, Oklahoma; the dispatch center is in Springfield, Missouri; and the maintenance centers are based in Jonesboro, Arkansas; Gore and Tupelo, Oklahoma; and Springfield, Missouri.

PROGRAM OVERVIEW

The FY 1996 budget request continues Southwestern's commitment to provide safe and reliable electrical service to our customers at the lowest possible cost. The administration is proposing to sell Southwestern by the end of FY 1998. The sale will give a preferential right of purchase to existing customers. The sale price will be based on the estimate of the net present value of the principal and interest payments that the Treasury will receive from Southwestern. Southwestern's budget also reflects the following influences: the Department of Energy's Total Quality Management Initiative, the National Performance Review's recommendations, growing demands on the power system, and quantifiable performance measures.

BUDGET SUMMARY

The following table summarizes Southwestern's FY 1996 Budget request:

	FY 1995	FY 1996	Difference
Total Program	$34,491,000	34,564,000	+ 73,000
Reimbursable Authority	- 3,935,000	- 4,272,000	- 337,000
Total Budget Request	30,556,000	30,292,000	264,000
Available Prior Year Balances	- 9,240,000	- 514,000	+ 8,726,000
New Budget Authority	$21,316,000	29,778,000	+ 8,462,000

The FY 1996 total budget request reflects a decrease of $264,000 due to a reduction in program needs. For the second consecutive year, Southwestern proposes to use banked energy to meet average-water year, direct-purchase power requirements previously funded through annual appropriations. The FY 1996 New Budget Authority is significantly greater than FY 1995 due to significantly lower prior year balances. This year Southwestern will offset its total budget request by $514,000 in prior year balances. Southwestern's use of Federal and non-Federal reimbursable authority reduces the FY 1996 total budget program by $4,272,000, or approximately 12 percent.

BUDGET HIGHLIGHTS

Southwestern's budget is divided into three general activities: (1) Operations and Maintenance; (2) Purchased Power and Wheeling; and (3) Construction. The following table reflects the funding amount requested for each activity:

	FY 1995	FY 1996	Change
Operations and Maintenance	$19,939,000	$21,297,000	+ 1,358,000
Purchased Power and Wheeling	2,888,000	3,186,000	+ 298,000
Construction	11,664,000	10,081,000	- 1,583,000
Total Budget	$34,491,000	$34,564,000	+ $73,000

The Operations and Maintenance activity provides for the support of 195 Full-Time-Equivalents working in the areas of power marketing, transmission system operations and maintenance, and general program management. The proposed $21,297,000 budget for Operations and Maintenance is an increase of $1,358,000 from FY 1995. This increase is due to an increased emphasis on transmission facilities maintenance. The budget request includes $20,897,000 for direct program activity and $400,000 of reimbursable authority.

The Purchased Power and Wheeling activity provides for the funding of wheeling expenses necessary to meet Southwestern's power sales contract obligations to utility customers. The proposed budget for Purchased Power and Wheeling is $3,186,000, an increase of $298,000 from FY 1995. This change reflects an increase in reimbursable authority of $337,000 and a decrease in contractual requirements for wheeling expenses of $39,000. Southwestern is able to meet direct energy purchases, previously funded by annual appropriations, through the use of energy banks. The budget request includes $1,464,000 for direct program activity and $1,722,000 of reimbursable authority.

The Construction activity provides for the replacement and improvement of transmission, substation, switching, and communication facilities. The proposed $10,081,000 request for Construction is a $1,583,000 decrease from the FY 1995 budget request of $11,664,000. The budget request includes $7,931,000 for direct program activity and $2,150,000 in reimbursable authority. In FY 1996, Southwestern will continue to focus on restoration of our transmission facilities by replacing aging and obsolete transmission system equipment.

REIMBURSABLE AUTHORITY

Southwestern's need for reimbursable authority is based on Federal and non-Federal cooperation. By utilizing this authority, Southwestern is able to meet customers' needs through joint efforts in utility planning, construction projects, and energy purchases.

The level of reimbursable authority requested for FY 1996 is $4,272,000. This request proposes to use reimbursable authority in Construction to fund $2,150,000 in additions and modifications to Southwestern's transmission lines, substations, and electronic facilities; $2,000,000 will come from utility customers and $150,000 from Federal agencies. These additions and modifications are driven by customer requirements for increased capacity and service reliability. Another $1,772,000 in reimbursable authority is requested for Purchased Power and Wheeling. The Federal portion of $1,687,000 includes costs for purchased energy for Government installations, Fort Sill and McAlester Army Ammunition Plant in Oklahoma. The non-Federal portion of $35,000 will be received from municipal customers. The remaining $400,000 of reimbursable authority is requested for Operations and Maintenance activities in support of State and Federal entities and utility customers.

PERFORMANCE MEASURES

In conjunction with the Department's Total Quality Management Initiative and in preparation for future compliance with the Government Performance and Results Act of 1993, Southwestern has developed performance measurements that reflect the implementation of Section 5 of the Flood Control Act of 1944 to market and deliver all Federally generated hydroelectric power. These measurements are:
(1) availability of Federal hydroelectric power compared to the amount marketed and delivered; (2) cumulative principal payments as a percent of total Federal investment; (3) system lost-time injury frequency compared to the industry average; (4) change in operating costs compared to change in the Consumer Price Index; and (5) generation

system performance compared to North American Electric Reliability Council (NERC) criteria.

FINANCIAL ACCOMPLISHMENTS

In FY 1994, Southwestern benefitted from better than average energy generation, which resulted in total revenues in excess of $109 million, thereby providing $32 million for the repayment of Federal investment and $18 million in interest. Based on audited financial statements, the FY 1994 revenue collection was the third highest in the history of Southwestern.

For the thirteenth straight year, Southwestern has improved the repayment status. Southwestern's cumulative repayment is $330 million applied to the total repayable Federal investment of $1 billion, or 33 percent. Since the last rate filings, Southwestern has increased its actual repayment over planned repayment by 34 percent.

Southwestern continues to strengthen our financial internal controls to provide an efficient and effective utility program. With audited financial and program statements, a strong self-assessment program, measurable financial performance indicators, and ongoing financial system improvements, Southwestern is in full compliance with the requirements of the Chief Financial Officers Act of 1990 and in sound financial condition.

OTHER ACCOMPLISHMENTS

In FY 1994, Southwestern marketed and delivered all available Federal hydroelectric power to 92 wholesale customers. In the delivery of hydroelectric power, Southwestern attained the NERC Honor Roll with a 96.5 performance index.

In addition, Southwestern completed a system-wide environmental risk assessment on all 24 Southwestern substations; held two workshops on integrated resource planning for our customers in Arkansas and Oklahoma; placed 12 major transmission projects into service which involved multiple substation construction elements; replaced obsolete power line carrier equipment with optical ground wire to increase communication reliability; and met all power and energy commitments under our power sales contracts.

SYSTEM RATES

Southwestern reviews hydroelectric power rates annually for the Integrated System, consisting of 22 hydroelectric projects and Southwestern's transmission system; the Sam Rayburn Project; and the Robert D. Willis Project.

During FY 1994, the Southwestern Federal Power System experienced above average rainfall, which allowed Southwestern to meet all contractual obligations without having to purchase energy from outside sources. Hydropower energy exchanges increased our energy bank balances, while sales of supplemental energy increased total revenues. Timely rate adjustments have helped Southwestern meet our repayment obligations. While customers are concerned that costs be held to a minimum, they are supportive of adequate rate levels which enable Southwestern to meet its statutory cost recovery responsibilities. The FY 1994 review of Integrated System rates found the level to be adequate to meet repayment requirements. System rates were therefore extended by the Deputy Secretary of Energy on August 29, 1994, for 1 year.

Rate changes on October 1, 1994, resulted in a 4.4 percent increase for the Sam Rayburn project and a 3.4 percent increase for the Robert D. Willis project. The Federal Energy Regulatory Commission issued final approval of these rates on November 21, 1994, for Robert D. Willis and on December 7, 1994, for Sam Rayburn.

TRANSMISSION SYSTEM MAINTENANCE

Southwestern's Operations and Maintenance and Construction budgets provide for transmission system maintenance and capital equipment. Approximately $15.9 million has been designated for routine, non-routine, and emergency maintenance activities. These activities involve both preventive and corrective maintenance on a high-voltage transmission system extending 1,380 miles or 2,220 kilometers in Arkansas, Missouri, and Oklahoma. Transmission system maintenance is required to assure continued power delivery reliability, enhanced overall performance and safety, and long-term cost savings.

In FY 1994, Southwestern, in cooperation with the International Brotherhood of Electrical Workers Local Union Number 1002, reorganized its field maintenance organizations by eliminating over 60 percent of its supervisory positions. Strategic plans were developed to incorporate equipment condition and risk assessments into preventive maintenance scheduling. The expected outcomes of these changes are lower, long-term maintenance costs and improvement of transmission system reliability.

The routine preventive maintenance program includes the planned replacement of poles, braces, and insulators; the servicing of transformers, circuit breakers, disconnect switches, protective relays, meters, and very high frequency and microwave radios; and the control of vegetation on transmission line rights-of-way.

Southwestern's customers and interconnected utilities are making more demands to upgrade facilities permitting greater use of Southwestern's system to meet the electrical requirements of the region. Thus, the Construction program emphasizes non-routine replacement of deteriorating system components, such as protective relays, power circuit breakers, current and potential transformers, switches, and powerline carrier communications links.

ENVIRONMENTAL PROGRAM

Since two Department of Energy audits in March of 1991 and 1993, Southwestern has made great strides in accomplishing all environmental requirements. With correction of all audit findings by July 1995, Southwestern will be in compliance with all environmental requirements. Southwestern conducted an Environmental Risk Analysis, using Environmental Protection Agency Superfund criteria and found all of our substations, switching stations, and field office sites environmentally well maintained.

Special emphasis maintenance programs in our field maintenance continue to include the removal and disposal of equipment containing more than 50 parts per million of polychlorinated biphenyls (PCBs), asbestos abatement, and the replacement of unreliable high-voltage insulators.

NATIONAL PERFORMANCE REVIEW INITIATIVE

In support of the National Performance Review recommendations, Southwestern reorganized in FY 1994 to reduce management layers. Further efforts in FY 1995 are expected to result in an employee-to-supervisor ratio of 10:1. Southwestern has also reduced Federal and contract staff. The FY 1996 requested Federal staffing level is 195 Full-Time-Equivalents.

Process changes have also been implemented to provide efficiency, cost savings, and better service to power marketing customers. These changes include the use of electronic mail, direct deposit of salary and travel checks, optical disk scanning for records management, a Maintenance Management Information System, a Supervisory Control and Data Acquisition/Energy Management System, a budget formulation database system, a standard automated procurement system, and quantifiable performance measurements.

Southwestern continues to be committed to a program guided by Total Quality Management principles. We continually strive to improve efficiency in our core operations through process improvements and meet customer expectations in the delivery of products and services. Southwestern regularly invites customer input through a Customer Working Group, Customer Conference, and through staff attendance at regional customer association meetings. These interactions have improved services to customers through joint participation studies on matters such as resource allocation and the identification of mutually beneficial transmission facility projects. Southwestern is currently developing a customer survey as part of the continuing process of understanding and meeting the ever changing needs in the region.

As part of the Administration's proposal to reinvent the Department of Energy, legislation will be proposed to privatize Southwestern in 1998. The Administration believes the purpose for the Federal Government developing and conducting these activities has been achieved and that these functions should now be performed by non-Federal entities. The proposal will provide customers protection against significant rate increases.

GROWING DEMANDS ON THE POWER SYSTEM

Technological advances have ushered Southwestern into the arena of a "responsible utility" where it is mandated by law to provide a variety of services and to meet legal requirements. Laws, such as the Energy Policy Act of 1992 requiring open access to transmission systems, have the potential to cause significant changes in Southwestern's operations and priorities.

With expanding load growth in the region, customers and interconnected utilities have expressed an increased interest in developing and upgrading facilities through cooperative efforts to permit greater use of Southwestern's transmission system and a more efficient use of the region's energy resources.

Demands are also made on the hydro resources by a significant group of customers, in addition to our power sales customers. Southwestern balances the interests of the hydropower recipients with the interests of other water resource users. While the electrical generation at the dams is used to meet Southwestern's utility responsibility, the water released during generation significantly impacts both in-lake and downstream activities such as recreation, civic events, farming, construction, navigation, and fish and wildlife. For example, Southwestern has dedicated significant effort to coordinating activities with Federal and State agencies interested in lessening the impacts on downstream fisheries caused by low dissolved oxygen levels in water released through generation at the projects. While our efforts have focused primarily on the White River in Arkansas and Missouri, we are also working with other water use interest groups in Oklahoma and Texas. Although the needs or desires of the various groups may sometimes conflict with the hydropower purpose or even among groups, Southwestern attempts to accommodate other water users through the diversity available from operating our projects as an interconnected system. We have been successful in developing trust among many such interests and are recognized as having a wider perspective of the public good.

BLACK START PROGRAM

Southwestern continually assesses the ability to provide continuity of service in the region during a black-out. In 1993, Southwestern, in cooperation with the U.S. Army Corps of Engineers and the Southwest Power Pool, developed an agreement which established the basis for a regional Black Start program for restarting major thermal plants using the quick-start hydropower plants. This coordinated Federal effort, in conjunction with other utilities, will significantly enhance the reliability of the interconnected power system in Southwestern's region.

MAJOR REHABILITATION AND UPRATING OF FEDERAL DARDANELLE PROJECT

During the past several years, Southwestern has worked with the Little Rock District, U.S. Army Corps of Engineers, on the rehabilitation and uprating of the Dardanelle Lock and Dam hydroelectric power plant on the Arkansas River. The Little Rock District has awarded a construction contract for the rehabilitation effort. Southwestern strongly supports the completion of the Dardanelle Major Rehabilitation Project. The Dardanelle power plant represents about 10 percent of Southwestern's interconnected system capacity.

CLOSING

In conclusion, Mr. Chairman, Southwestern requests a continuation of our power marketing program through the use of new Budget Authority, prior year unobligated balances, and Federal and non-Federal reimbursable authority.

Southwestern has implemented and continues to develop rates to assure that sufficient revenues are generated and returned to the Treasury. The revenues repay all operating expenses, interest, and Federal investment associated with the construction of the power generating and transmission facilities of the Southwestern Federal Power System in accordance with the statutory mandate of Section 5 of the 1944 Flood Control Act.

In order to provide a product at the lowest possible cost, Southwestern has streamlined its organization by restructuring, reducing staff, and implementing process improvements.

Through its Total Quality Management Program, Southwestern continues to involve its customers in process improvement efforts. Customer involvement and participation is more important than ever as Southwestern continues to address issues relating to increasing regional load growth and new power brokering, transmission system access, balancing the interests of hydropower recipients with other water users, and other issues that may impact Southwestern's ability to assure reliable delivery of hydroelectric power.

Mr. Chairman, we invite you to visit us any time and we look forward to the continued support and cooperation provided by the members of this subcommittee.

BIOGRAPHY

Forrest E. (Gene) Reeves
Acting Administrator

Forrest E. (Gene) Reeves has been with Southwestern Power Administration since 1965 when he joined the Agency's then Branch of Computer Systems as a Student Aide. After graduation from Oklahoma State University in 1968 with a Bachelor's Degree in Chemical Engineering, he became an electrical engineer in Southwestern's Division of Planning and Resources.

Mr. Reeves' career with Southwestern expanded into the Power Marketing/Power Resources area, then into Power Contracts/Rates and Repayment as a Public Utilities Specialist. He became Chief, Branch of Rates and Repayment in 1979 and became the Assistant Administrator of the Office of Power Marketing and Delivery in 1991.

In October of 1994, Mr. Reeves was appointed the Acting Administrator of Southwestern Power Administration.

For more than 20 years, Mr. Reeves has been a Director on the Board of the Tulsa Federal Employees Credit Union which has grown from $13 million to $210 million during his tenure. He has served in various leadership capacities including those of Chairman and Treasurer. Mr. Reeves has also served in numerous leadership capacities as a member of his church including the positions of Trustee, Chairman, and Deacon. He and his wife Marcia reside in Tulsa, Oklahoma, and have owned and operated a successful retail florist business.

Mr. Reeves' 27 years of Federal Service, devoted exclusively to Southwestern and its customers, are a tribute to the mission of the Agency and its publics.

February 1995

Statement of J. M. Shafer
Administrator, Western Area Power Administration
Department of Energy
FY 1996 Appropriations Hearing

Mr. Chairman and Members of the Subcommittee:

It is a pleasure to represent the Western Area Power Administration (Western) before this subcommittee. I appreciate the opportunity to present our fiscal year (FY) 1996 budget request and to discuss our programs and achievements. This budget represents Western's commitment to provide safe and reliable electric service to our customers at the lowest possible cost while achieving the Administration's initiatives in streamlining the Federal government.

MISSION AND ORGANIZATION

Western's mission is to market reliable, low-cost electric energy produced at Federal dams, and encourage efficient energy management in an environmentally sound manner. We market power throughout a 1.3-million-square-mile geographic area in 15 central and western states to 637 wholesale customers. In FY 1996, we will operate and maintain 16,734 miles of high-voltage transmission lines, 259 substations, and other associated power facilities. The electric power Western markets will be generated at 55 powerplants operated primarily by the Bureau of Reclamation (Reclamation) and the U.S. Army Corps of Engineers. In FY 1996, the installed capability of these powerplants will be 10,576 megawatts.

Recognizing the challenges posed by a changing utility industry, with increased competition and requests for transmission access that support the Energy Policy Act of 1992, Western embarked on the first phase of a strategic planning effort in FY 1994. We began a systematic look at a number of Western's activities to adjust our methods of operations, decrease our operating costs, and make our working environment more quality-conscious.

To date we have reduced Federal employment from an on-board strength of 1,606 in July 1992 to 1,482 in September 1994. Our FY 1996 full-time equivalent budget request is 1,460. We reduced our support service contract costs by 7.1 percent from FY 1993 to FY 1994, and we are flatlined through FY 1995. We are delayering management and increasing the supervisor-to-employee ratio from 1:5 in May 1994, to an estimated 1:8 in June 1995. We have reduced the number of organizational units from 192 a year ago to an estimated 121 this June.

Western is now embarking on the second phase of our Strategic Plan. Our second phase goal is to re-engineer Western to ensure that we meet our customer's needs and remain competitive in the market place. We plan to look at our current organizational structure and all of our processes and determine what organizations should be reduced or realigned, and what work should be eliminated or performed differently. We expect significant organization and operation changes to occur as a result of this effort over the next few years. This is a joint effort between Western employees, the employee unions, and our customers.

In addition, we are developing systems to evaluate our success in meeting customer needs and motivating employees, and in measuring progress in implementing our strategic plan.

PRIVATIZATION OF WESTERN AREA POWER ADMINISTRATION

As part of the Administration's proposal to reinvent the Department of Energy, legislation will be proposed to privatize three power marketing administrations, including Western. The Administration's anticipated revenue from the sale of Western in FY 1998 is $2.863 billion. The Administration believes the purpose for the Federal Government developing and conducting power marketing activities has been achieved and that these functions should now be performed by non-Federal entities. The proposal will provide customers protection against significant rate increases. A provision of the Balanced Budget and Emergency Deficit Control Act of 1985 generally prohibits counting the proceeds of asset sales as offsets to spending. However, the legislation to implement this proposal will include a provision to allow the proceeds to be counted as offsets to spending if the President and the Congress designate that they should be so counted.

STATUS OF WATER CONDITIONS

Reservoir storage levels in Western's service area help determine the amount of water that can be released at the 54 hydropower plants from which Western markets power. If this hydropower generation is not adequate to meet Western's firm contract obligations, Western purchases more costly power from other sources, which results in increased cost to our customers.

Following the significant gains during FY 1993, reservoir storage in most of Western's service territory declined slightly during FY 1994, ending the year at 89 percent of normal. With normal inflows in FY 1995, water storage is expected to increase to 91 percent of normal by the end of the year. System-wide hydro generation is projected to be 28,104 gigawatthours in FY 1995, 90 percent of normal, and 2,069 gigawatthours greater than in FY 1994. Hydrogeneration in FY 1996 is projected to be 29,154 gigawatthours.

Water conditions vary by river basin in Western's service area. In the Missouri River basin, where the main-stem reservoirs are at normal storage levels, generation for FY 1995 is expected to be 11,977 gigawatthours, about 94 percent of normal, and 12,500 in FY 1996, 98 percent of normal.

In the Central Valley Project, the drought in FY 1994 reduced reservoir storage to 52 percent of normal at the end of the fiscal year. As a result of above-normal precipitation thus far this winter, it is projected that all reservoirs except New Melones will recover to normal levels during FY 1995. New Melones, with normal inflows, will take approximately six years to recover. In FY 1995, project generation is forecasted to be 4,840 gigawatthours, 103 percent of average. In FY 1996, project generation is forecasted to be average, 4,700 gigawatthours.

Due to continuing dry conditions in the Colorado River basin, reservoir storage is expected to be 45 million-acre-feet or about 83 percent of normal at the end of FY 1995. With normal inflows, full recovery is expected to take at least five years. Basin-wide generation is projected to be 11,005 gigawatthours in FY 1995, 86 percent of normal. In FY 1996, generation is projected to be 11,409 gigawatthours, about 89 percent of normal.

BUDGET HIGHLIGHTS

Western's FY 1996 program level request of $318.9 million for construction and rehabilitation, operation and maintenance, and purchase power and wheeling consists of $310.9 million in new budget authority (including $4.6 million of permanent budget authority for the Boulder Canyon Project) and $8.0 million of prior year budget authority. This $318.9 million program request is $15.9 million below the FY 1995 approved level of $334.8 million. The decrease is primarily due to a reduced funding level for the Mead-Phoenix and Mead-Adelanto Projects which will be placed in service during the second quarter of FY 1996, and the procurement of supervisory control and data acquisition equipment. Western's FY 1996 request also includes $5.3 million for Western's annual contribution to the Utah Mitigation and Conservation Account, as specified in the Reclamation Projects Authorization and Adjustment Act of 1992.

Obligational authority of $129.4 million is requested in FY 1996 for the Colorado River Basins Power Marketing Fund, an increase of $2.1 million above FY 1995. The increase is primarily for additional power purchases due to environmental constraints and increased cost of basic supplies, equipment and stock items, such as crossarms, insulators, minor electrical equipment, and parts.

Additionally, the Foreign Relations Authorization Act, Fiscal Years 1994 and 1995, directed that a separate fund, known as the Falcon and Amistad Operating and Maintenance Fund (Maintenance Fund) be created in the Treasury of the United States. The Maintenance Fund is administered by the Administrator of Western for use by the

Commissioner of the United States Section of the International Boundary and Water Commission to defray operation, maintenance (O&M), and emergency costs for the hydroelectric facilities at the Falcon and Amistad Dams in Texas. Western's FY 1996 request includes $1 million for these activities and is the initial year for Western to request such budget authority. Funds for the O&M of these facilities were previously included in appropriation requests of the Department of State.

Specific appropriation or fund amounts requested in FY 1996, compared to the FY 1995 level, are as follows:

BUDGET REQUEST SUMMARY
(dollars in thousands)

APPROPRIATION OR FUND/ACTIVITY	FY 1995	FY 1996 REQUEST	DOLLAR CHANGE	PERCENT CHANGE
CONSTRUCTION, REHABILITATION, OPERATION AND MAINTENANCE				
Operation and Maintenance [1]	$131,797	$128,958	- $2,839	- 2.2 %
Purchase Power and Wheeling [1]	104,986	118,175	+ 13,189	+ 12.6 %
Construction and Rehabilitation	92,883	66,512	- 26,371	- 28.4 %
Utah Mitigation and Conservation Account	5,135	5,283	+ 148	+ 2.9 %
TOTAL PROGRAM	$334,801	$318,928	-$15,873	- 4.7 %
Planned Use of Prior Year Balances	-105,044	-8,020	+ 97,024	+ 92.4%
Total Budget Authority Request [1]	$229,757	$310,908	+$81,151	+ 35.3%
COLORADO RIVER BASINS POWER MARKETING FUND (OBLIGATIONAL AUTHORITY)	$127,316	$129,414	+ $2,098	+ 1.6 %
FALCON-AMISTAD MAINTENANCE FUND	$ -0-	$ 1,000	+ $1,000	+100.0 %

[1] Includes permanent budget authority for the Boulder Canyon Project.

SYSTEM OPERATION AND MAINTENANCE

Western's FY 1996 request of $128.9 million for operation and maintenance supports the day-to-day operation and maintenance of electrical and communication facilities and reflects a 2 percent reduction ($2.8 million) from FY 1995. The FY 1996 request includes $109.9 million for regular operation and maintenance, a decrease of $2.3 million (2 percent) from FY 1995. The decrease reflects aggressive implementation of cost containment initiatives in concert with our customers, and completion of the environmental impact statement related to the Central Valley Project marketing plan. Marketing, scheduling, dispatching, and billing of Western's energy resources, general power resources planning, energy services, and environmental activities are also included in this request.

In addition to regular operation and maintenance funds, $19.0 million is requested for replacements and additions. This includes replacement of critical components such as transformers, circuit breakers, revenue meters, relays, and switches; replacement of a fire suppressant system at the Miles City, Montana, Converter Station; and procurement of special purpose equipment and vehicles to reduce the safety hazards for personnel.

Phase Shifter Operation

For many years the interconnected transmission system of the Western United States has had "loop flow" problems, or the problem of power transfers flowing along paths other than those contractually scheduled. With large amounts of generation in the Pacific Northwest and large demand in the Pacific Southwest during summer months, heavy transfers flow south along the California Intertie. During the winter months this power flow reverses and flows northward to satisfy winter needs. A significant amount of electric energy from these transactions tends to flow along unscheduled paths on the eastern side of the western interconnected system.

Western has been instrumental in developing an Unscheduled Flow Mitigation Plan in cooperation with the Western Systems Coordinating Council. The Unscheduled Flow Mitigation Plan uses controllable devices, mainly phase-shifting transformers, to reduce or eliminate the unscheduled flow, and compensates the owners of controllable devices used in the implementation. Western will receive a net benefit of approximately $1.4 million for each year the Unscheduled Flow Mitigation Plan is in place.

In late January 1995, the Federal Energy Regulatory Commission conditionally approved the Unscheduled Flow Mitigation Plan, while continuing to study the calculation of the phase shifter costs and the allocations of these costs. The Western Systems Coordinating Council implemented the Unscheduled Flow Mitigation Plan on March 1, 1995.

Energy Planning and Marketing

A major Western goal is to promote the efficient use of electric energy by Western's customers through preparation and implementation of integrated resource planning, as required by section 114 of the Energy Policy Act of 1992. Integrated resource planning is a process for new energy resources that evaluates the full range of alternatives, including new generating capacity, power purchases, energy conservation and efficiency, cogeneration and district heating and cooling applications, and renewable energy resources. Another Western goal is to market Western's long-term firm resources in a manner that supports effective integrated resource planning by Western's customers.

These two goals are being pursued through Western's Energy Planning and Management Program.

Over the past year, Western has made significant progress in the development of the proposed Program. A draft environmental impact statement on the proposed Program was made available to the public in late March of 1994, followed by eight public hearings throughout Western's service territory. On August 9, 1994, the proposed Program was published in the Federal Register, starting a 90-day public consultation and comment period. Seven public information/comment meetings were held in six western states in September 1994. Public comments were mainly focused on the length of the contract, the terms and conditions of any resource extension, the use of Integrated Resource Planning principles by Western, and the issue of firm power deliveries to Native American Tribes.

The final Program regulations and the associated environmental impact statement are scheduled for completion by mid-1995.

I am pleased to report that Western has also begun a public process to adopt the use of the Integrated Resource Planning principles for our resource acquisition and transmission planning activities. Through the use of the Integrated Resource Planning principles, Western will enhance its ability to purchase resources and make investments in a business-like and environmentally responsible manner.

In FY 1995, Western conducted a market assessment for power that could be generated from solar electric generators in the proposed southern Nevada Solar Enterprise Zone. This project supports renewable energy and non-polluting resources while promoting responsible stewardship of the environment. Funding for the marketing study was provided by the Department of Energy's Office for Energy Efficiency and Renewable Energy.

Military Base Closings

There is potential for a change in the disposition of Western's current Central Valley Project power allocations as a result of military base closings. On January 3, 1995, Western began accepting applications for the Central Valley Project power that is currently allocated to military bases being scheduled for closure under the Defense Base Closure and Realignment Act of 1990. In the past, Western allowed the reassignment of contract commitments between military bases in the same marketing area, either on a case-by-case basis, or under the terms of the applicable marketing plan. To alleviate the negative impact on local economies that depend on the installations for employment and revenue, the National Defense Authorization Act of 1994 requires Western to market Central Valley Project power that becomes available due to base closures under the Defense Base Closure and Realignment Act of 1990 to a preference entity that agrees to use the power to promote economic development in the same physical location. Western currently has a total of 34.2 megawatts of power available to market under the National Defense Authorization Act of 1994 as a result of the closure of three military bases.

PURCHASE POWER AND WHEELING

In support of Western's goal to effectively market the Federal energy resources in accordance with legislation and existing contractual commitments, Western purchases power (energy and capacity) to firm up the Federal hydropower supplies. Western also purchases wheeling services when a third party's transmission lines are needed to deliver Federal power to Western's customers.

For FY 1996, Western is requesting $118.2 million (including $114.6 million in new budget authority and $3.6 million of prior year funds) for purchase power and wheeling, an increase of $13.2 million above the FY 1995 level. The total FY 1996 purchase power and wheeling program, including alternative financing of $150.1 million is $268.3 million, approximately the same level as FY 1995.

The FY 1996 request assumes that water conditions will improve, resulting in a lower level of purchases; from 9.0 billion kilowatthours in FY 1994 to 7.4 billion kilowatthours in FY 1996. Although the overall level of purchases is expected to decline, the requested increase of $13.2 million is primarily due to purchases of more expensive non-firm energy for the Central Valley Project from Northwest and California suppliers in order to extend the low-cost benefits of the Western/Pacific Gas & Electric Company Energy Account No. 2. As a result, total program costs are minimized over the life of the Pacific Gas & Electric Company contract, thereby providing for rate stability through the year 2004. Other factors affecting costs are price increases of 1 to 5 percent for firm energy purchases from the Central Valley Project contract suppliers, an increase in wheeling charges for the Fryingpan-Arkansas project, and an increase in open market purchases for the Boulder Canyon project due to loss of interchange arrangements.

Western continues to look for opportunities to minimize the need for appropriations by using revenues to provide alternative financing arrangements, such as bill crediting, net billing, reimbursable authority, customer advanced funding, and energy banking.

CONSTRUCTION AND REHABILITATION

Western's FY 1996 construction and rehabilitation request is $66.5 million, a decrease of $26.4 million below FY 1995. This decrease is due primarily to reduced funding for the Mead-Phoenix and Mead-Adelanto projects. The emphasis of Western's FY 1996 construction and rehabilitation request is replacement of existing facilities. Existing transmission lines and substations must be refurbished, rebuilt, or upgraded to ensure acceptable long-term performance and to avoid unacceptable safety hazards to the public and increased power outages. Over 54 percent of Western's FY 1996 request is for replacement of substation equipment. If substation equipment is not replaced in an orderly manner, Western's ability to operate a reliable, cost-effective, and safe power system would be severely jeopardized.

The Mead-Phoenix and Mead-Adelanto Projects will be placed in service in FY 1996. These projects are prime examples of Western's joint participation with others in the electric utility industry to provide the needed transmission capacity to make the most efficient use of existing energy resources. These projects link the Phoenix, Arizona area with Southern California creating regional marketing opportunities for electricity and more efficient use of Western's power resources through interregional power transfers and seasonal diversity exchanges.

Western is participating with other utilities in a project that will provide electric service to the North Star Steel Mill in Kingman, Arizona. The steel mill will provide American jobs and will support the North American Free Trade Agreement through exports of steel to such foreign countries as Mexico. The scheduled in-service date for the steel mill is October 1995. Funding for the project has been provided by North Star. The economic benefits resulting from this project include increased revenues to Western of approximately $1 million annually from the use of our transmission system. This will provide a positive rate impact to Western's customers.

Western is also currently negotiating contracts with the Bureau of Reclamation and various California preference customers that have indicated an interest in jointly providing financing to rewind and uprate three of the five main generators at the Shasta Dam powerplant. Due to age and deterioration, the core temperatures of these units have been steadily increasing for the last decade, threatening their reliability.

POWER MARKETING PLANS

Many of Western's firm power contracts are expiring during the next decade. The following is a summary of contract expiration dates:

Project	Expiration Date
Pick-Sloan Missouri Basin Program	December 31, 2000
Loveland Area Projects	September 30, 2004
Salt Lake City Area Integrated Project	September 30, 2004
Central Valley	December 31, 2004
Parker-Davis	September 30, 2008
Central Arizona Project (Navajo)	September 30, 2011
Boulder Canyon	September 30, 2017
Falcon/Amistad	June 8, 2033

In FY 1994, the Central Valley Project Marketing Plan was completed for a portion of the Central Valley Project power allocations. Contracts offered under the Plan will expire on December 31, 2004, as will all other Central Valley Project long-term 1994 firm power contracts.

Salt Lake City Area Integrated Projects power is being marketed under an interim plan pending completion of the Salt Lake City Area Integrated Project Environmental Impact Statement and the Bureau of Reclamation's Glen Canyon Dam Environmental Impact Statement. A record of decision on each environmental impact statement is expected to be available in the summer of 1995. These contracts will expire on September 30, 2004.

On November 21, 1994 a Federal Register Notice was published for the final Provo River Project Marketing Plan for the output of the Provo River Project through contractual arrangements separate from the Salt Lake City Area Integrated Projects.

Long-term firm power contracts for Pick-Sloan Missouri Basin Program-Eastern Division and the Loveland Area Projects are scheduled to expire on December 31, 2000, and September 30, 2004, respectively. Western's Energy Planning and Management Program will provide a framework for marketing power from these projects in the future.

POWER REPAYMENT, MARKETING, REVENUES, AND RATES

Repayment of Investment

As of September 30, 1994, the investment to be repaid by Western's power systems totaled about $5.9 billion of which $2.2 billion, or approximately 37 percent, has been repaid. Cumulative power revenues total $12.1 billion since the late 1920s when Western projects began operating. This sum has provided $4.6 billion for operation and maintenance, $3.2 billion for purchase power, $2.1 billion for interest, and $2.2 billion for repayment of investment in facilities and assistance to irrigation. The following table summarizes repayment status by project:

CUMULATIVE STATUS OF REPAYMENT AS OF SEPTEMBER 30, 1994 (DOLLARS IN MILLIONS):

Project Power System	Init. Year of Repay. Studies	Power Rev.	Income Trans (Net)[2]	Exp.[3]	Power Invest.[4]	NonPower Invest. to be Repaid by Power	<Deferred Expense>/ Surplus Revenues[5]	Invest paid to Date	Unpaid Bal. of Invest.
Boulder Canyon	1937	904	(24)	662	245	25	(9)	217	53
Central Arizona (Navajo)	1974	1,004	(160)	834	0	0	10	0	0
Central Valley	1944	3,458	0	3,141	513	63	0	317	259
Collbran	1963	27	0	22	14	5	0	5	14
Colorado River Storage	1963	2,036	0	1,549	995	837	(51)	538	1,293
Falcon-Amistad	1955	56	0	47	44	0	0	9	36
Fryingpan-Arkansas	1983	98	0	101	149	0	(3)	0	149
Pacific Northwest-Pacific Southwest Intertie[6]	1968	83	0	86	70	0	(4)	2	68
Parker-Davis	1942	639	3	429	290	27	(5)	217	100
Pick-Sloan Missouri Basin[7]	1950	3,675	(2)	2,947	1,936	643	(172)	898	1,681
Provo River	1958	5	0	3	1	0	0	1	0
Rio Grande	1949	63	0	48	13	6	0	15	4
Seedskadee	1992	10	0	9	7	0	(3)	3	4
Washoe	1987	1	0	4	9	0	(3)	0	9
TOTAL		12,057	(183)	9,884	4,286	1,605	(238)	2,221	3,670

[1] Columns and rows may not add due to rounding.
[2] Income transfers (Net) will be negative for transfers out of a project, and positive for transfers into a project.
[3] Expenses include operation and maintenance, purchase power and wheeling, and interest.
[4] Power Investment does not include Deferred Expense or repayment assistance to nonpower investment, primarily irrigation investment. Nonpower Investment and Deferred Expenses are shown as separate columns.
[5] Negative amounts in this column are the cumulative amounts of unpaid interest and/or operating expenses. Positive amounts in this column are cumulative surplus revenues in excess of expenses and principal repaid.
[6] Alternating Current facilities only.
[7] Includes the four integrated projects (North Platte, Shoshone, Colorado-Big Thompson, and Kendrick.)

Power Revenues and Energy Sales

In FY 1994, Western marketed 36.1 billion kilowatthours of available energy to wholesale power customers and received gross operating revenues of $787.6 million. For FY 1995, Western estimates energy sales at 36.4 billion kilowatthours, and revenues at $850.2 million. For FY 1996, Western estimates energy sales at 36.5 billion kilowatthours, and revenues at $916.1 million.

Status of Power Rate Adjustments

Power rate adjustments have been initiated or completed on the Pick-Sloan Missouri Basin Program Eastern Division, Loveland Area Projects, Boulder Canyon Project, Parker-Davis Project, Salt Lake City Area Integrated Projects, Central Valley Project, and Pacific Northwest-Pacific Southwest Intertie. Actual rate adjustments are as follows:

POWER RATE ADJUSTMENTS

¢/kWh = cents per kilowatt hour

PROJECT	ADJUSTED COMPOSITE RATE	EFFECTIVE DATE
Pick-Sloan Missouri Basin Program, Eastern Division	1.42 ¢/kWh [1]	02/01/94
Loveland Area Projects	2.17 ¢/kWh [1]	10/01/94
Boulder Canyon	1.26 ¢/kWh	02/01/94
Parker-Davis	1.20 ¢/kWh [1]	10/01/95
Salt Lake City Area Integrated Projects	2.017 ¢/kWh	12/01/94
Central Valley	3.16 ¢/kWh [1]	10/01/95
Pacific Northwest-Pacific Southwest Intertie	$8.01/kWyr	10/01/95

[1] Second steps of multi-step increase, which will be reviewed during FY 1995.

In conclusion, I would like to express my appreciation for the cooperation and support provided by this Subcommittee. Our successes are directly associated with these efforts. We look forward to working together as we face these new and challenging times.

Mr. Chairman, this concludes my presentation of Western's FY 1996 budget request and program status. If you or the Subcommittee members have any questions, I would be pleased to answer them.

BIOGRAPHICAL SKETCH

JOHN M. SHAFER
Administrator
Western Area Power Administration

John M. (J.M.) Shafer was selected as Administrator of Western Area Power Administration in September 1994. His appointment at Western became effective Oct. 2, 1994.

Western markets and transmits federally generated power in a 15-state area.

Shafer graduated from the University of Wyoming in 1966 with a bachelor's degree in electrical engineering. He began his career with Southern California Edison Company in San Bernadino, Calif., in 1966. In 1967, he began working for the Federal government as an engineer for the U.S. Bureau of Reclamation in Casper, Wyo., and then in Reclamation's offices in Denver and Grand Lake, Colo., from 1967 to 1978.

His career at Western began with his position as Technical Support Division Director in 1978. He served in many different leadership positions until his appointment as Loveland's Deputy Area Manager in 1984. He served in this position until 1988.

Shafer then moved on to Southwestern Power Administration in Tulsa, Okla., where he was appointed Administrator in September 1988.

Shafer has achieved many honors. In 1992, he was selected to participate in the Program for Senior Managers in Government at the John F. Kennedy School of Government at Harvard University. Shafer, a registered professional engineer, was also appointed to the board of directors and executive committee of the Southwest Power Pool, an association of utility executives that establishes standards for reliable electric service in southwestern states. In addition, he was recently appointed to the board of trustees for the North American Electric Reliability Council, the principal organization for the planning and operation of electric utilities in North America.

Shafer and his wife, Michele, have two grown children and one granddaughter.

# # #

2/95

THURSDAY, MARCH 16, 1995.

NUCLEAR WASTE DISPOSAL FUND

WITNESS

DANIEL A. DREYFUS, DIRECTOR, OFFICE OF CIVILIAN WASTE MANAGEMENT

Mr. MYERS. The committee will come to order. I am afraid I am going to be the committee today.

We have an appropriations bill on the Floor, so it is not that we lack interest in your responsibilities, but the fact that we have other work to do. So your prepared statement will be placed in the record, and you may proceed as you like.

Dr. Dreyfus, we are pleased to have you today. Nuclear waste is a very important problem. I say it is a problem; I wish it were only an important challenge. It is a challenge, though. We are pleased to welcome you today and to hear from you.

Mr. DREYFUS. Yes, sir. I will try to summarize very quickly what I think are the key points of the statement. I am accompanied by Mr. Lake Barrett, who is my deputy. I am pleased to report that we have made significant progress in the program since I last appeared before you.

OPENING REMARKS

Last year we proposed a restructured program and a future funding profile that would permit us to meet the policy goals that are set by Congress in the Nuclear Waste Policy Act. I appreciated your support and this committee's support for the proposal in the 1995 appropriation.

Using the increase that you approved in 1995, we have taken the initiatives to revise the program as we proposed at that time. We implemented a new program approach in late 1994 and a rigorous cost and schedule performance measurement system was established to track progress. Currently we are within 10 percent of meeting the scheduled targets for this point in this fiscal year that we set forth at that point.

We have defined two major project business centers within the program. They are the Yucca Mountain Site Characterization Project and the Waste Acceptance Storage and Transportation Project. We have also created a management component for the program that provides integration, planning, and support for the director and the projects.

The major objective of the new program approach is to reach convergence on the complex scientific activities at Yucca Mountain by the end of 1998 and determine if the site is technically suitable to develop as a repository. If the site is found suitable, we will deliver a recommendation and an Environmental Impact Statement to the

President in the year 2000 and submit a competent license application to the Nuclear Regulatory Commission in 2001.

To address the issue of waste acceptance, our program will develop for the marketplace a new generation of technology, a multipurpose canister system for at-reactor off-site storage, transportation and ultimately for disposal of spent fuel. We will also continue to prepare for the orderly transportation of spent fuel from reactor sites to centralized storage.

The overall 1996 budget request for the program is $630 million which includes $431.6 million in mandatory funding and $198.4 million from the Defense Nuclear Waste Disposal appropriation. In addition, $700,000 is requested for the Civilian Radioactive Waste Research and Development Program which is funded from the Energy Supply Research and Development appropriation and which is general fund money.

NEW FUNDING INITIATIVE

To support the budget request, the administration is proposing a new funding initiative. As provided in the Nuclear Waste Policy Act, the civilian portion of this program is funded by the beneficiaries of the program through the collection of a fee on the commercial generation of nuclear power. In addition, the Federal Government provides funding to the program for the share of the costs related to disposal of defense-related high-level waste through the Defense Nuclear Waste Disposal appropriation.

Under the existing funding approach, annual appropriations to the program from the nuclear waste fund are considered to be discretionary appropriations. Despite the fact that the ratepayers of nuclear utilities have been paying substantially more than the annual appropriation requests, to date more than $4 billion more, the program must compete against other departmental programs for a share of the Department's allocation within the Federal Government's discretionary appropriation cap.

A legislative proposal was submitted to the Congress on February 27th which authorizes mandatory funding for the civilian portion of the program. Under this authorization mandatory funding would be made available to the program in fiscal years 1996 through 1998, offset by the sale of the U.S. Enrichment Corporation.

The proposal also includes a provision for the Appropriations Committee, this committee, to provide limitations and direction to the funding of the program. The oversight that we propose would be similar to the relationship that this subcommittee already has, and has had for many years, with the Bonneville Power Administration.

In addition to these mandatory amounts, the discretionary appropriation would continue to be requested from the Defense Nuclear Waste Disposal appropriation. This approach is consistent with the intent of the Nuclear Waste Policy Act which stipulated that the program was to be self-financed by the owners and generators of spent nuclear fuel and high-level waste. Implementation of this program would provide the necessary funding to maintain the milestones for the scientific and technical investigations of Yucca

Mountain and to develop advanced technologies for the near-term storage of nuclear waste.

FY 1996 BUDGET REQUEST

The 1996 budget request for the Yucca Mountain site is $472.1 million. It represents a $96.8 million increase over 1995 and also represents nearly all of the total program increase we are requesting. The funding will enable us to make substantial progress towards a determination of site suitability.

The work at Yucca Mountain is pretty much on track with the new program that we established last year. With the money we now have, the tunnel boring machine would complete the north ramp, and in the 1996 budget, we would be able to reach the repository formation and begin to explore, hands-on the major features of the site.

We will begin work on an Environmental Impact Statement for the repository this year and in 1996 we will complete the implementation plan. During the past year, our interactions with the Nuclear Regulatory Commission have increased in intensity. During 1996, we would continue to develop with the Commission Staff, an acceptable licensing strategy consistent with our new program approach.

The fiscal year 1996 budget request for the waste acceptance, storage and transportation portion of the program is $61.6 million. This category includes three line items from the congressional budget submission, monitored retrievable storage, transportation, and waste acceptance.

The major activity in 1996 will continue to be development of a multipurpose canister system to help standardize at-reactor and off-site storage facilities, facilitate transportation, and to simplify waste disposal.

Our 1996 request for program support is $96.3 million. Funding includes $14.5 million for quality assurance, $13 million for systems integration and regulatory compliance and $68.6 million for program management activities. Program management costs will increase only 9 percent between fiscal year 1994 and fiscal year 1996, while the total program budget increase is about 66 percent.

We have taken steps to hold management costs down, and we will continue to work to hold them even lower. We have an established managerial and technical capability, and we have implemented a new program approach to carry out the legislative mandate that we now have. We believe the new approach is scientifically sound and achievable. It sets forth explicit tasks. We have associated the tasks with target dates and costs, and we will continue to measure progress against the targets. The increased funding provided for the program in 1995 has enabled us to initiate the new program approach.

The funding proposal we are proposing for 1996 and beyond is consistent with the proposal we submitted last year and will enable us to continue to make meaningful progress towards the goals in the Nuclear Waste Policy Act. This is a critical period for the program. I urge the members of the subcommittee to continue their strong support for the purposes of the program and to support the funding level required to complete our mission.

Thank you, Mr. Chairman. Mr. Barrett and I will be pleased to respond to questions on our full statement which I assume will be included in the record.

YUCCA MOUNTAINS

Mr. MYERS. It will, Dr. Dreyfus. Thank you for your presentation.

As we have discussed in other years, and as we have discussed off the record, the country is facing a real problem, as we all know, because there are a great many power companies—generating companies—that are just right up to here with nuclear waste. They have been paying into the fund faithfully, but they feel that we have betrayed them, because we aren't proceeding as fast with the repository, whether it be interim or permanent. We have shared that, and you spoke about that in your presentation.

How do we tell the utilities that there is hope at the end of the tunnel, if I may use that phrase? I don't know if there is an end to the tunnel out there. Mr. Bevill, who is on the Floor right now, often comments that he was out there to see the hole, and he said he had a feeling if he went back 20 years from now, the hole would still be there and they would still be grinding away. They wouldn't be a whole lot further along. He just thinks it is an endless endeavor there.

What can we tell the utility companies that they might expect in 1998 and then on to the year 2000? Will we have some hope at that point, do you think, seriously? What does the prospect appear to be?

Mr. DREYFUS. Yes, I do. The program, as you know, had a difficult past. It began with the instruction to look for not only 20 to 30 potential sites for a repository but also an interim storage site. During the period between 1982 and 1987, everyone learned a lot more about that task than I think they knew at the beginning. Sites were winnowed down. And in 1987 the Congress, of course, did two things. It first moved from the Department's interim storage program to a voluntary interim storage program which did not, in fact, bear fruit. It took the Department out of the interim storage business, and with regard to the repository program, selected Yucca Mountain for the site characterization. There was subsequently a delay due to litigation.

When I arrived on the scene, the program had been seriously underfunded for its entire duration. We simply could not carry out the program we had with the funding we had. We have now converged that. The program now has a plan which can be accomplished by the funding that we have requested. If we are funded, we will converge the scientific program, which is very complex, touching on many disciplines, in 1998.

And by 1998, in the program, we will know with some specificity whether we have insurmountable technical problems at that site, whether we can design a repository, and what it is likely to cost to build it. We will have an Environmental Impact Statement in draft form which will reveal what the legal problems may be in that line, and we will have a sufficient closure with the Nuclear Regulatory Commission that it and we can predict whether a license will be a successful venture, at least in terms of the ability to make the showings. I think in 1998 you will know whether you have a repository or not.

I am not pleased by the fact that there is not an alternative in the program, there is not a contingency plan, but I think we will conclude in 1998 whether geologic storage at the Yucca Mountain site, or indeed whether any geologic storage, is something the country wishes to proceed with.

SITE SUITABILITY

Mr. MYERS. Well, at this point, is it unfair for me to ask you if there are any indications of the likelihood of the characterization being positive—that the mountain will be a suitable site? Is it too early to begin making any guesses on that?

Mr. DREYFUS. It is never too early to ask where we are. We have no reason to believe at this point that the site will not be suitable. We have several significant technological challenges that have to be resolved in the design of the repository, and, of course, we still have a great deal of exploration to do which could, in fact, turn up something inconsistent with the hypothesis.

I have said, and am willing to repeat, that I think there is an 80 percent probability that the site will turn out to be technically capable of being a repository. The licensing process is a different piece of work. It is basically providing assurances to the American public that we know what is going to happen for 10,000 years. I would say the probability of that is somewhat short of the technical issue.

NUCLEAR WASTE FUND

Mr. MYERS. How much is in the fund now that the utilities have been paying into? What is the balance?

Mr. DREYFUS. There are several ways to compute that, but basically the credit in the Treasury that has not been expended the way we compute it is $4 billion.

Mr. MYERS. $4 billion?

Mr. DREYFUS. Yes, sir.

Mr. MYERS. How much is annually added to that by the utilities?

Mr. DREYFUS. Well, the collections in 1996 will be about $600 million and then there is an interest payment, there is interest calculated on the amount that is in the Treasury, and if you put it all together, as in an accounting sense, the fund will gain about a billion dollars in 1996.

Mr. MYERS. The recommendation is that authorizing legislation make the waste fund a mandatory program. What is the status of that legislation now?

Mr. DREYFUS. We have submitted a legislative proposal. It rests before both Houses and was introduced by request in the House of Representatives. However, there was a markup in the Commerce Committee yesterday on the U.S. Enrichment Corporation bill which did not include the language in the bill as reported.

Mr. MYERS. I have some questions about the enrichment Corporation and about the mandatory one-time sale, and what do you do after that, but I will put those in the record.

You are requesting $472.1 million. Is that the maximum of your capability this year to move on the mountain?

Mr. DREYFUS. Let me get my sheets in front of me because I want to make sure we don't round wrong here. What we are requesting in fiscal 1996 for the total program is actually $631 million.

Mr. MYERS. That is from all accounts.

Mr. DREYFUS. From all accounts, yes, sir; $432 million from the waste fund, and that is the mandatory appropriation.

Mr. MYERS. Again, does the $630 million represent your maximum capability?

Mr. DREYFUS. The total we have requested is consistent with the funding profile we put together last year and with the program approach that we have adopted, and for the mission we now have, it is entirely adequate to stay on schedule and do what we have to do.

INTERIM STORAGE

Mr. MYERS. Well, there is no consensus as far as I know within the Congress of the future here, but there is strong feeling—becoming stronger all the time—that some interim storage is going to be necessary.

Mr. DREYFUS. Yes, sir.

Mr. MYERS. Close to the site there. Have you reviewed any of the possibilities of interim storage? I don't think you want to call it an interim or temporary storage because temporary, in those cases, often becomes permanent. But has there been any consideration or recommendation that we might take care of our problem in this way?

Mr. DREYFUS. Well, we have examined the legislation pending in both Houses that would authorize an immediate start on interim storage at the Yucca Mountain site. We know what the requirements would be to do that. We have reconnaissance grade information about the actual construction costs and considerations, so, yes, we know what we would do if that instruction were given to us. That of course is not funded in this funding profile, but we have a pretty good idea what the impact would be.

Mr. MYERS. Have there been any contingency plans about how long it would take to provide interim storage—how soon we could provide that for the industry?

Mr. DREYFUS. Yes, sir. Basically if we were given an instruction and a site, those are the two considerations, of course. There was once an exercise to site one of these, it took about seven years and resulted in nothing, so the site is the question. If a site were designated by the Congress and the authorization to construct were given to us, I have testified that it would take, under existing law and doing all of the requirements and assuming a year of litigation one way or another, about eight years to get the job done.

If one wants to be very optimistic about procedural matters, you could perhaps say seven or perhaps a little less. If we look at the provisions of the House bill, the Upton-Towns bill which is pending, which truncates and provides a variety of legal defenses, that could conceivably be a three- to four-year proposition from the standing start. Because it essentially provides that you can construct concurrently with doing the EIS and licensing, it is an accordion effect on a variety of activities that otherwise would be done serially and turns the seven years into three or four. Again, this assumes that there are not successful legal challenges.

Mr. MYERS. The seven, eight years then would include not only technical requirements but also political; is that right?

Mr. DREYFUS. The seven or eight years assumes that one would first go out and do an environmental impact statement, subsequent to that obtain a license and subsequent to licensing construct the site. The actual construction is a two- or three-year proposition.

ON-SITE STORAGE

Mr. MYERS. How many utilities are going to run out of storage space in this interim period between now and seven or eight years from now?

Mr. DREYFUS. There are six that are into dry storage now. By the year 2000, we would add to that a number of probably 10 more. In 1998, we would have about 17 sites in 14 States that would require supplemental additional out of pool storage. There are now about six and three planning. By the year 2010——

Mr. MYERS. Would you please provide your chart for the record?

Mr. DREYFUS. Yes, I can provide a schedule for the record on out through the end.

[The information follows:]

INTERIM STORAGE

Prior to and through 1998, seventeen nuclear power stations will require dry storage. The following table summarizes the additional stations which will require additional storage before the start of waste acceptance:

Storage Capacity Augmentation
Requirements

Year	Station	Utility	State (location of Station)
Through 1998	Arkansas Nuclear One Big Rock Point Brunswick Calvert Cliffs Davis-Besse Duane Arnold Maine Yankee Millstone Nine Mile Point North Anna Oconee Oyster Creek Palisades Point Beach Prairie Island H.B. Robinson Surry	Arkansas Power& Light Consumers Power Carolina Power & Light Baltimore Gas & Electric Toledo Edison Iowa Electric Power &Lt. Maine Yankee Atomic Northeast Utilities Niagara Mohawk Virginia Power Duke Power General Public Utilities Consumers Power Wisconsin Electric Power Northern States Power Carolina Power & Light Virginia Power	AR MI NC MD OH IA ME CT NY VA SC NJ MI WI MN SC VA
1999	NONE		

2000	Ginna Fitzpatrick Kewaunee Salem/Hope Creek Susquehanna Waterford	Rochester Gas & Electric New York Power Auth. Wisconsin Public Service Public Service Elec.&Gas Penn. Power & Light Louisiana Power & Light	NY NY WI NJ PA LA
2001	Vermont Yankee Enrico Fermi Saint Lucie Washington Nuclear	Vermont Yankee Nuclear Detroit Edison Florida Power & Light Washington Public Power Supply System	VT MI FL WA
2002	Dresden Peach Bottom Hatch	Consolidated Edison Philadelphia Electric Co. Georgia Power	IL PA GA
2003	Grand Gulf McGuire	Gulf State Utilities Duke Power	MS NC

PRIORITY OF YUCCA MOUNTAIN PROJECT IN FY 1996 BUDGET

Mr. MYERS. Mr. Frelinghuysen.

Mr. FRELINGHUYSEN. Good morning. I have been trying to get a handle on this Yucca Mountain Site Characterization Project. I understand it is one of your highest priorities; isn't that right?

Mr. DREYFUS. Yes, sir, it is.

Mr. FRELINGHUYSEN. And you came before the committee last year——

Mr. DREYFUS. Yes, sir.

Mr. FRELINGHUYSEN. [continuing]. With a new proposal?

Mr. DREYFUS. Yes, sir.

Mr. FRELINGHUYSEN. To provide more money outside the normal budget process?

Mr. DREYFUS. Yes, sir. Last year we had a proposal that would have provided a portion of the money, $150 million increase in a mandatory sense. The bulk of the program was funded in the conventional discretionary sense last year.

Mr. FRELINGHUYSEN. But in lay terms, you asked for more money for the program outside the normal budget process?

Mr. DREYFUS. It was a mandatory appropriation, yes, sir.

Mr. FRELINGHUYSEN. Wasn't there a committee report?

Mr. DREYFUS. Yes, sir, there was a committee report.

Mr. FRELINGHUYSEN. Are you familiar with that report?

Mr. DREYFUS. Yes, sir, I am very familiar with the report.

Mr. FRELINGHUYSEN. What about that portion of the report and I quote, "it is not clear to the committee why the present authority of the Department is not sufficient to allow this program to compete for the required funding of the Department"?

Mr. DREYFUS. Yes, I am familiar with that.

Mr. FRELINGHUYSEN. Why isn't it?

Mr. DREYFUS. Well, the essence of the situation is that——

Mr. FRELINGHUYSEN. Why isn't there the authority to do it?

Mr. DREYFUS. There is the authority to do the program under discretionary appropriations. That is not the question. The question is whether the program can, in fact, compete for the amount of funds needed in competition with other pressures.

Mr. FRELINGHUYSEN. Who determines whether it can compete, if it is one of your highest priorities, surely you can make it compete successfully. I need to know how the process works here.

Mr. DREYFUS. Well, the way the process works is that the Department of Energy gets an allocation from the Office of Management and Budget for a total cap. Within that cap, the Department must do its work and make its choices, this program being one of them, along with the cleanup program and defense weapons program and a variety of other programs. The problem here is that this program is a user-funded program, which is deficit neutral.

Mr. FRELINGHUYSEN. Quite substantially.

Mr. DREYFUS. Way more than deficit neutral. Therefore, what we would be in a position of saying is that the people who paid for a service, and this is not like even things like the Land and Water Conservation Fund where there is a general receipt. The situation here was that the service was described by the Congress, the fund was created to pay for it, and to now say, well, you will take your

20 or 30 percent cuts along with other general fund programs does not seem to be a rational way to go.

If it goes that way, then I would say had I been through the competitive process within the Department, I would have a high priority. I would not have a fully funded program. The history of the program has been that it has not been fully funded. That is one reason that it is accused of having spent billions without making progress because you can't make any——

Mr. FRELINGHUYSEN. Well, I am new here, so explain to me how it is rational to go outside the normal budget process. Isn't it far more rational if you are running a Department and have responsibilities in this area to set certain priorities? I thought this was a major priority.

Mr. DREYFUS. It is a major priority.

Mr. FRELINGHUYSEN. But it obviously hasn't succeeded in competing against other interests, is that what you are telling me?

Mr. DREYFUS. The President and the Secretary have given the program the priority in the sense of requesting that the special situation in the waste fund be recognized and that the appropriate accounting be put in place. What we have here is a situation in which the funds are collected. In any normal accounting system what would happen here is the waste fund collection for next year, $600 million, would not be shown as profit. There would be an offsetting liability because the funds need to be spent for this program.

The way it is now accounted for in the Federal budget, it is shown as profit. In other words, you carry the money to the bottom line. This is the same as if a contractor took an advance payment to buy lumber for a deck, used it to pay his light bill, and at the end of the year showed a profit because of that fund, without any liability for ever providing the deck.

Now, that is precisely what happens here, the contract is that we created the fund to pay the exact costs of this program. We have used $4 billion of it to balance the books in the government without noting a liability, so the situation you have is the current deficit computation is wrong. It is wrong by any normal accounting procedure that anyone would use anywhere in the world, and this would correct it. It would simply recognize that these funds have a liability associated with them, and therefore should be used to fund the liability.

Mr. FRELINGHUYSEN. I am confused. How is anything being corrected if you are basically doing what you did last year? How does that correct the situation?

Mr. DREYFUS. We tried last year to get a portion of it as a mandatory appropriation, and that did not happen. We are trying again to get the portion from the Waste Fund to be recognized to be a deficit neutral transfer of funds as opposed to being scored as income and competed with everything else as an outflow. So I am sure if I sat with you, I could convince you rationally this is the right way to go.

The immediate impact, however, is to have a deficit problem because these funds have already been scored as anticipated income without any offsetting liability. Therefore, to correct it, one must balance the books within the total deficit, the deficit limit on the Federal Government. It is simply a question of do we want to correct the accounting approach or do we continue to treat the program as if it were not user funded and compete for the funds.

Mr. FRELINGHUYSEN. It seems to me as a layperson that the nuclear industry has, to a certain extent, kept their side of the bargain.

Mr. DREYFUS. Yes, sir, they have.

NUCLEAR WASTE FUND

Mr. FRELINGHUYSEN. I am just a little bit confused. My figures show a larger contribution to the Treasury than $4 billion. I thought it was $8 billion.

Mr. DREYFUS. Well, the nuclear industry computes two or three things differently. In that $8 billion is, first of all——

Mr. FRELINGHUYSEN. Maybe you could tell us how you arrived at $4 billion.

Mr. DREYFUS. I could tell you how they arrived at $8 billion or how I arrived at $4 billion. The difference is they have put in their accounting the contribution from the Defense Fund, which is general fund money, and an anticipated lump sum payment that some utilities will make when we pick up the fuel. But they have not made them. The $4 billion is the actual collections.

Both are rational, and I can argue them either way, but the Treasury——

Mr. FRELINGHUYSEN. A $4 billion difference.

Mr. DREYFUS. The Treasury Department only computes the portion they have collected, and that is $4 billion. The others are future liabilities.

Mr. FRELINGHUYSEN. Well, thank you for doing your level best to explain this to me.

Mr. DREYFUS. I will give you a comparison that shows exactly how those numbers work out.

Mr. FRELINGHUYSEN. Thank you.

[The information follows:]

TREASURY/INDUSTRY NUCLEAR WASTE FUND COMPARISON

An accounting for the difference between the amount of dollars in the Nuclear Waste Fund in Treasury (about $4 billion) and the amount the utility industry says is in the Fund (about $8 billion) is below:

Nuclear Waste Fund Status

(Billions of dollars, data as of December 31, 1994)

OCRWM Calculation:

Fees Paid		$ 6.7
Investment earnings		$ 1.6
	Total	$ 8.3
Disbursements		$ 4.0
Net Balance		$ 4.3

Utility Calculation:

Fees Paid		$ 6.7
Investment earnings		$ 1.6
One-time fees accrued:		
Principal		$ 0.9
Interest		$ 1.0
Defense fees owed		$ 0.7
	Total	$ 10.9
Disbursements		$ 4.0
Net Balance		$ 6.9

Notes:

The utility calculation includes one-time fees and interest not yet paid to the Nuclear Waste Fund. It also includes the accrued fees that the Department owes to date for the disposal of defense high-level waste.

Mr. FRELINGHUYSEN. Thank you, Mr. Chairman.

Mr. MYERS. Thank you, Rodney.

REGULATORY ACTIONS

At the Yucca Mountain site, you have a lot of people working, and you have a lot of agencies. The Nuclear Regulatory Commission is regularly there. They have people located permanently there; is that correct?

Mr. DREYFUS. No. The Nuclear Regulatory Commission has one or two people that are customarily at the site and frequent visits by large numbers of people. The Nuclear Regulatory Commission will have an appropriation of about $22 million this year only to regulate my program, and there are somewhere around 90 people, but there are only two that are permanently resident at the site.

Mr. MYERS. What type of regulatory action do they take at the site there?

Mr. DREYFUS. The same as they would have if I were trying to license a nuclear power plant. My program is the only program in the Department of Energy that is regulated by the Nuclear Regulatory Commission. Everything else the Department does in a nuclear sense is self-regulated under the Atomic Energy Act, but this program is regulated by the Commission exactly as if it were a private venture to build a nuclear power plant.

Mr. MYERS. Do they have the authority to direct you to take certain action to stop certain things?

Mr. DREYFUS. Yes, sir, they do.

Mr. MYERS. Have they exercised that?

Mr. DREYFUS. Oh, they have exercised the authority to place standards on what we do and, yes, they could if they wished on a safety basis.

Mr. MYERS. Safety basis for the workers there? What do you mean by safety basis?

Mr. DREYFUS. The safety basis for the workers there is done several different ways. They have an interest in it, but that is basically the Department of Energy problem until we get into nuclear safety. We have no nuclear materials on the site at the moment.

It is a quality assurance aspect to the integrity of the data, the integrity of the site, the ability to utilize the data in future licensing procedures, that sort of thing, and based on that, they can issue us a variety of warnings that we may not be doing—that we may in some way be damaging future data and, therefore, recommend stop work orders, those kind of powers they have.

Mr. MYERS. Have they impeded progress there by their orders and directives?

Mr. DREYFUS. The Commission?

Mr. MYERS. NRC.

Mr. DREYFUS. No. Essentially what we have to do there is we have to come up with a documentable, viable license. We are in constant interaction with them to assure that what we do would result in a viable license. That, after all, is their standard. So, yes, if you want to look at the overburden, the reason that there is a high management component in this program is because it is a nuclear-licensed program, and that does add costs. But ultimately, I wouldn't consider it to be obstruction. I would consider it to be reaching an accommodation and to have a viable licensing application that can succeed in their arena, which is an independent arena.

Mr. MYERS. Could you provide for the record what type of regulatory actions they have taken and anything that has added costs to the proceedings to ascertain the characterization of Yucca Mountain?

Mr. DREYFUS. We can give you the breakout as to what portion of the costs are associated with nuclear compliance, yes.

[The information follows:]

NUCLEAR REGULATORY COMMISSION REGULATORY ACTIONS

At this point in the program, the Office of Civilian Radioactive Waste Management is not yet either a formal license applicant or a licensee of the Nuclear Regulatory Commission. However, the ultimate ability of the Office to carry out the intent of the Nuclear Waste Policy Act (NWPA) depends upon its ability to prepare a viable license application that the Commission deems adequate to docket and to support the application through the Commission's licensing process in which some participants and intervenors are almost certain to be adversaries. In FY 1995, the Commission has a budget of approximately $22 million, drawn from the Nuclear Waste Fund, to support 35 full-time staff and additional contractor support to conduct its regulatory activities.

The interactions between the Office and the Commission during the current site suitability activities are intended to achieve several purposes, including:

1. ensuring that this Office is correctly interpreting the Commission's regulations concerning licensing of the repository;

2. safeguarding the integrity of information gathered in the site suitability process to protect its future usefulness in support of the licensing process and its validity under contesting examination; and

3. to the extent possible, resolving technical issues with the Commission staff and developing a mutual understanding on the content of a viable license application.

Because no such facility has ever been licensed in the U.S. or anywhere in the world, this dialogue is very complex and very important.

The ongoing activities in support of these objectives are costly and time consuming. The Office maintains a quality assurance program which in FY 1995 costs approximately $24.0 million to ensure that data collected by site characterization activities and work completed for multi-purpose canister design and procurement adequately support the Commission's requirements for licensing and certification. The quality assurance program will continue through each phase of the licensing process for the repository and for each phase of the certification process for the multi-purpose canister development effort. This type of quality assurance program differs from, and goes beyond, the requirements for other programs within the Department that are not subject to the Commission's licensing or certification requirements.

In addition to the Commission's requirements for quality assurance, the Office is also required to provide an electronic information management and distribution system known as the Licensing Support System (LSS). The purpose of the LSS is to provide rapid access to documents and data relevant to the licensing hearings for the potential repository, and thereby assist the Commission in its statutory obligation under the Act to make a timely determination approving or disapproving the Department's application for repository construction within three years of its submittal. The Commission's 1989 revision of its rule on domestic licensing proceedings (10 CFR Part 2) required the Department to provide the LSS to expedite dissemination of licensing information to participants in the licensing proceedings. Subpart J of the revised rule requires that the Department obtain Commission certification of the LSS six months prior to the submittal of the Department's construction application, which is scheduled for the year 2001. The Office has begun work to support this date. As of FY 1994, the program has identified approximately 355,000 records that have been accumulated by the site characterization effort and deemed necessary to support repository licensing. Through the license application period, the program expects over 1,650,000 records to be introduced into the LSS, which will total over 21,000,000 pages of documents needed to support the Commission's review of the license application. In FY 1995, approximately $300,000 will be spent to develop implementation requirements for FY 1996 LSS development activities. This Office expects a significant increase in the funds needed to proceed with full implementation of the LSS as the scientific and technical investigation of Yucca Mountain continues and more information relevant to the suitability of the site and the licensing proceedings is generated. It is anticipated for FY 1996 that the costs will increase significantly to at least $3 million, or higher.

In preparation for the Commission's review of future license application activities, we maintain a continuous dialogue with the Commission through technical exchange meetings, management meetings, site visits, and semi-annual briefings. In addition, this Office supports the Commission's Advisory Committee on Nuclear Waste (ACNW), a panel of scientists and technical experts, which convenes at the request of the Commission to hear briefings on selected topics of interest to the Committee. These meetings, which may run a half a day or longer, generally require the attendance of our senior management and staff, and the Commission's senior management and staff in Rockville, Maryland. These meetings also require the participation and support of other staff members to prepare and respond to the concerns and inquiries of the Commission, or to provide presentations requested by the ACNW.

By continuing to maintain the timely flow of information to the Commission through these meetings, this Office fosters and funds the dialogue necessary to ensure that regulatory policies, management practices, and technical information required for licensing and certification are clearly addressed by the program. For example, interactions between the Commission and this Office, in cooperation with the National Academy of Sciences, are currently supporting the development of regulatory requirements for disposal of spent nuclear fuel and high-level waste at Yucca Mountain. During FY 1994, approximately 25 meetings were held between the Commission and this Office with an additional 10 ACNW meetings held for specific topics.

In addition to these mandatory interactions with the Commission, this Office is committed, under the NWPA, to support and meet with the Nuclear Waste Technical Review Board, which serves as an unbiased independent Federal agency overseeing the Office's technical program activities. In carrying out its mandate, the Board reviews, comments and provides recommendations on the scientific and technical validity of activities undertaken by the Office. The Board's meetings provide a public forum to discuss, in detail, the Office's technical activities. Support for the Board's meetings normally requires the attendance of senior staff from this office, including myself, the Deputy Director, the Yucca Mountain Project Manager, and other senior project staff. Typically, the Board's meetings require 6-10 technical presentations from senior technical staff to address specific areas of interest to the Board. In preparation for these meetings, which run approximately 2 to 3 days at locations chosen by the Board in areas near Yucca Mountain, resources from other staff members preparing briefing materials must also be allocated. The commitment of these resources are not without benefits. Through these meetings and from reviewing this Office's activities, the Board periodically provides recommendations to the Secretary, to which this Office formally responds. These meetings are also attended by representatives from external agencies. The Board's recommendations have resulted in substantive changes to the program. From these meetings, this Office has gained clearer insights regarding the issues it faces and has benefited from fresh ideas on approaches for resolving them. While the Department may disagree with the ripeness of certain issues or Board recommendations, the Board provides a means to ensure that issues are identified and addressed in a formal manner. Over the past 12 months, the Board held 11 meetings to address a number of key aspects of the program, and a similar number of meetings are anticipated for the coming year.

As with the activities supporting the Commission, there are costs associated with this Office's interactions with the Board. For example, approximately $2.8 million was spent in FY 1994 to support meetings to address the scientific and technical topics that the Board deemed important to discuss. This total includes the costs to prepare and disseminate necessary information and to assemble knowledgeable technical personnel and interested stakeholders. In addition to the cost of convening Board meetings, this Office commits program funds to address the Board's formal recommendations to the Secretary. The level of support for these activities are expected to continue and may possibly increase as site suitability activities approach the 1998 completion date, and as work to support our licensing effort intensifies.

Finally, there are also other regulatory activities this Office is required to support to satisfy environmental regulations from the State of Nevada that are mandated by Federal environmental statutes. In implementing the federally-mandated environmental statutes, the State has developed through its permitting and compliance program regulatory requirements that must be met to continue site characterization activities at Yucca Mountain. The Office, because environmental compliance is of such a vital importance, has developed and maintained an environmental, safety and health program to direct its compliance with applicable statutes and regulations. In FY 1994, the Office committed approximately $2.6 million to support these activities.

In conclusion, while the question at hand asked for specifics regarding the Commission's regulatory activities, the overall framework to which this Office must adhere to for preparation of a viable license application entails supporting activities beyond those actions taken by the Commission. It is this Office's continuing ability to sufficiently address a broad range of regulatory and oversight requirements, of which the more significant are summarized above, that will work towards ensuring the viability of any licensing activity to the Commission.

LESSONS LEARNED

Mr. MYERS. Utilities who are providing electricity for our country are up to their chins right now in nuclear fuel and we have somebody standing out there worrying about whether you crossed a "T" or dotted an "I," that is what concerns this committee.

The committee, as we have expressed to you, is concerned about the lack of progress, how slow that mountain has moved. They just finished a tunnel over there, the chunnel across the English Channel. They moved pretty fast once they got started, didn't they?

Mr. DREYFUS. No, sir, not really. If you look at the history——

Mr. MYERS. How many years did it take them?

Mr. DREYFUS. My recollection is it was about a four- or five-year job with 11 tunnel machines operating, and with all of the same problems we had. My understanding of that job is that the stockholders in the chunnel will never see a profit. The cost doubled during the course of the activity and they were not doing it under nuclear regulation. It was a simple construction job.

Mr. MYERS. Haven't we learned something about how they did their job? Why do we have to reinvent the wheel again?

Mr. DREYFUS. I have looked at their job. They killed 11 people, and maimed 23 more, and as I say, went broke, and broke their contracts and stayed in constant litigation. This is a thing where the final result has been sold as being a success story.

There is a success story in having pulled out of a real bad situation about halfway through, but it isn't a model I wish to pursue, certainly not with regard to the casualty rate. It has been like an infantry frontline company. I have heard a whole lot from the people on the chunnel about how well we could do this, but I don't accept it. There is learning curves in this.

Tunnel work is difficult, and tunneling is not everything we are doing. We have scientists accompanying that tunnel doing scientific work. They did not. They managed to flood their tunnel in the early days. These things are not quite as clear cut as sometimes portrayed.

Mr. MYERS. You are not worried about a flood out there?

Mr. DREYFUS. I hope not.

PROGRESS OF TUNNEL WORK

Mr. MYERS. But you do have some fractures, I understand, or some fissures out there in the mountain that may leak a little bit. You may come out with your tin helmet a little wet sometimes. We are just concerned about how slow this thing is moving. We would like to help you in any way we can—not to kill anybody off but to provide the utilities with a place to store their nuclear waste, because we have an obligation. We have a contract. They are doing their share by paying money into the fund, and the American people—and particularly this subcommittee—have been a little unhappy about how slow progress is moving out there. We would like to help you in any way we can.

Mr. DREYFUS. We have a program and if we get funded, we will deliver a result. I cannot go back and get the first 12 years and the first billion-and-a-half back.

Mr. MYERS. No, you can't do that.

Mr. DREYFUS. When I look at the history, I realize it is a strange history but I don't think it is quite well understood, either. From here on out, we are going to deliver you a product and an answer by the year 2000. I don't know that I can guarantee what the answer is, but I will finish the job.

Mr. MYERS. A lot of construction sites, they have so many work days without lost time. Could you provide us a chart of last year how many work days you were stopped or slowed down because of some regulation from someone else other than the Department of Energy and your responsibility, NRC or EPA.

Is EPA out there?

Mr. DREYFUS. No, sir. EPA will set standards for us, but they are not immediately—well, on the other hand, we have so many permits of so many different things, we probably do have an EPA permit. I am sure it is a State permit, clean air stuff.

Mr. MYERS. If you would give us another chart of how many days you were able to work and how many days you were slowed down or stopped.

Mr. DREYFUS. Yes, sir.

[The information follows:]

DAYS OF CONSTRUCTION DELAYED DUE TO FEDERAL AGENCY REGULATIONS

No major Yucca Mountain construction (i.e., Exploratory Studies Facility construction) has been stopped due to other Federal agencies' regulations. Also, there have been no work stoppages during the past 12 months due to Environmental Compliance/Permitting activities. However, the following are examples of other Yucca Mountain activities that have been delayed because of regulations imposed by other Federal agencies, or by the State of Nevada:

U.S. Department of Interior Bureau of Land Management right-of-way approvals have not yet been received for the following: Quaternary Faulting at Bare Mountain (test pits and trenches). Application date: June 27, 1993. Crater Flat Surface Excavations, Phase V (test pits). Application date: June 25, 1993. Sleeping Butte Excavations, Phase IV (test pits). Application date: March 16, 1994.

Prior to a court ruling in 1991, the State of Nevada had refused to process DOE permit applications for site-disturbing work. This refusal delayed work about 21 months. Since that court ruling, and the threat of Congressional action in 1992, the State has been even-handed in processing DOE applications.

Mr. MYERS. Thank you very much, Dr. Dreyfus.

We have a vote on the House Floor. That means we have to go back and do our constitutional duty. We appreciate your testimony today. All of us, I think, have a series of questions that we will provide for the record. We appreciate your cooperation in moving as fast as you can.

Mr. DREYFUS. Yes, sir, thank you.

Mr. MYERS. The committee will stand in recess until we have our vote on the House Floor.

[Questions and answers for the record, the biography of the witness, the prepared statement of the witness, and the final report of the Office of the Nuclear Waste Negotiator follow:]

GENERAL PROGRAM

Mr. Myers. Under the Administration's proposal to establish payments from the Nuclear Waste Fund as mandatory appropriations, the sale of the Federal government's uranium enrichment enterprise is identified as an offset to satisfy pay-as-you-go budget requirements for new mandatory spending. Net revenues from the sale, however, would only be realized for a few years. What plan has the Administration developed to offset the mandatory appropriation once proceeds from the sale of the uranium enrichment enterprise are no longer available?

Dr. Dreyfus. The restructured program and the associated funding profile through fiscal year 2000 were identified in the Civilian Radioactive Waste Management Program Plan which was issued in December 1994. Although the program funding requirements have been identified through the year 2000, the Administration has identified budgetary offsets at this time only for fiscal years 1996 through 1998, related to the sale of the United States Enrichment Corporation. The intention would be that all future allocations to the program from the Nuclear Waste Fund will be mandatory appropriations. The annual amounts after 1998 will be authorized by future legislative proposals.

Mr. Myers. What is the current status of the Administration's proposal to establish Nuclear Waste spending as mandatory?

Dr. Dreyfus. The legislative proposal was transmitted to Congress on February 27, 1995. The "Nuclear Waste Disposal Funding Act." (H.R. 1174) was introduced by Representative Upton (R-MI) on March 8, 1995, and referred to the House Commerce Committee.

Mr. Myers. Given the urgency of the nation's nuclear waste disposal problem and the time-sensitive nature of the appropriations cycle, why was this proposal not submitted to Congress prior to, or concurrently with, the Administration's budget for FY 96?

Dr. Dreyfus. At the time of the President's FY 1996 budget submittal to Congress on February 6, 1995, the interagency review process for the legislative proposal for additional funding for the Civilian Radioactive Waste Management Program had not been completed.

Mr. Myers. Doesn't the Administration's failure to request sufficient discretionary funding to sustain the nuclear waste disposal program in FY 96 amount to a gimmick to liberate more budgetary resources for less urgent priorities of the Administration?

Dr. Dreyfus. The civilian portion of the radioactive waste management program currently is funded by the beneficiaries of the program through collection of a fee on the commercial generation of nuclear power. Annual appropriations to the program from the Nuclear Waste Fund, however, are considered to be discretionary appropriations. Additionally, receipts to the

OFFSET
CAMERA COPY

Fund are used to offset the Federal budget deficit. These funds are part of the Department's allocation that are within the Federal Government's discretionary spending caps established by law.

Consequently, the Civilian Radioactive Waste Management Program must currently compete for available funding against all other "discretionary" Federal programs. Within the Department's declining overall budget there are many competing priorities, such as environmental clean-up, and there is strong competition within the Department's spending allocation. The Administration's proposal is to fully fund the program for multiple years by recognizing in law the user-funded, revenue-neutral situation of the civilian portion of the program. The proposal is a good faith effort to ensure long-term funding from dedicated receipts in the Treasury. To continue to submit annual, discretionary budgets would be to prolong resolution of this problematic funding mechanism.

NUCLEAR WASTE BUDGET LEGISLATION

Mr. Myers. In transmitting its "nuclear waste budget legislation" to Congress, Secretary O' Leary stated that, "the Administration plans to review the adequacy of its budget request prior to July 1, 1995, or prior to the time of Congressional appropriation action, whichever occurs earlier." For purposes of this review, how does the Department define "Congressional appropriation action"?

Dr. Dreyfus. The Department defines Congressional appropriation action as the time when Congress completes passage of an Appropriations Act.

Mr. Myers. Recognizing that the Subcommittee is presently engaged in its active review of the President's budget and in the prioritization of competing requests, is it fair to assume that a revised budget request for the waste fund will be received by the Subcommittee several weeks prior to its final mark-up of the annual appropriations bill for fiscal year 1996?

Dr. Dreyfus. In the Secretary's transmittal of legislation to amend the Nuclear Waste Policy Act of 1982, she stated that the Administration plans to review the adequacy of its budget request prior to July 1, 1995, or prior to the time of the Congressional appropriation action, whichever occurs earlier. The Administration urges Congress to consider the merits of its proposal to provide additional funding for the Nuclear Waste Fund program. We are trying to address a long-term problem with a multi-year solution. Identifying funding for FY 96 is only a one year "fix".

Mr. Myers. Is it also safe to assume that the revised request will include realistic, outlay-neutral offsets to any proposed increases in discretionary funding for the waste fund?

Dr. Dreyfus. Any revised budget request submitted by the Administration will include sufficient deficit-neutral offsets for any proposed increases in discretionary funding for the waste fund program. Language in the transmittal letter relating to a budget amendment was designed to address a potential funding shortfall in the period of time between Congressional action and the sale of the United States Enrichment Corporation which would likely occur later.

GENERAL PROGRAM

Mr. Myers. Assume the committee provides the full amount of the current budget request for discretionary appropriations ($198.4 million) and that the authorizing committees fail to embrace the Administration's legislative proposal in a timely fashion. Describe how the program would be affected by an FY 96 budget based on a total appropriation of approximately $200 million for the year.

Dr. Dreyfus. The program's activities and the sequence in which they would be carried out are dependent upon funding and the projected out-year funding profile available to the program. If the necessary funding is not provided, either the discretionary appropriation request would have to be revised and supplemented or the program would be severely curtailed. A $200 million total program would clearly not support the current mission or schedule and would require curtailment rather than postponement of many ongoing activities.

Mr. Myers. Which activities would be continued and which would be suspended or terminated under such a scenario?

Dr. Dreyfus. No current plan exists for a Civilian Radioactive Waste Management Program funding level of $200 million for FY 1996. Should this scenario occur, a restructuring of the program plan would be required with accompanying significant delays in the development of multi-purpose canisters and expected year of determination of Yucca Mountain site suitability. To accommodate a reduced funding profile, we would try to retain critical path and long lead time activities and do tasks sequentially rather than concurrently or at lesser annual accomplishment rates, as appropriate. At a level of $200 million, we would postpone any work directed toward licensing until the site suitability determination had been made.

NEW PROGRAM APPROACH UNDER CURRENT BUDGET CAPS

Mr. Myers. Your written testimony states, "It will be difficult to continue to support the new program approach under the current budget caps." This Subcommittee is under no illusion that life under the budget caps is easy. We recognize, however, that to operate within the caps requires hard choices and responsible ordering of priorities. The Department of Energy's overall budget for FY 96, which provides for an increase above the FY 95 level, manifests apparent failure to make such hard choices. Does the decision to remove the Nuclear Waste Fund appropriation from the budget discipline of the caps reflect the Department's judgement that other programs throughout its budget are of greater relative importance?

Dr. Dreyfus. The mission to develop a repository for this country's nuclear waste is one of the highest priorities of the Department. Unfortunately, our inability to access the dedicated contributions to the Nuclear Waste Fund has impeded our progress on this project. The legislation we have submitted would allow us to finance the program at the necessary level without negative impacts on either the deficit or other important Departmental efforts over a multi-year time period.

In order for the Department to meet its commitment to fulfilling the provisions of the Nuclear Waste Policy Act by creating a repository for nuclear waste within a reasonable period of time, an increase in funding for the Nuclear Waste Fund program is essential at this time. The Nuclear Waste Policy Act of 1982 provided the means to finance this program without impact to the American taxpayers. Our proposal enables the Department to carry out the previous guidance from Congress.

Mr. Myers. Are we to understand that the Department's proposed Energy Supply Research and Development activities, for example, represent a higher priority for the Department than the long-term disposal of nuclear waste?

Dr. Dreyfus. No, DOE's proposal for discretionary funding for Energy Supply Research and Development activities verses the approach we took for funding the activities associated with the long term disposal of nuclear waste does not represent a prioritization of Energy Supply Research and Development activities. The funding mechanism used for Nuclear Waste Fund activities is a method to balance all requirements of the Department within limited dollars and is in sync with the funding sources provided in the Nuclear Waste Policy Act of 1982. We were pleased to be able to identify an offset (the sale of the United States Enrichment Corporation), which would provide us with access to the funds needed through FY 1998, and we believe that opportunity does not present itself with great frequency. Putting the funding on the mandatory side of the ledger was a good faith attempt by the Administration to address the long-term funding profile of this program and allow us access, with Congressional oversight, to the funds paid to the Treasury expressly for that purpose.

Mr. Myers. Are the Department's technology transfer activities and its math and science education efforts of similar paramount importance?

Dr. Dreyfus. All of the Department's activities are important and are funded within the constraints of the discretionary budget caps. The Administration's proposal for funding the Nuclear Waste Fund is a recognition that the constraints on the Department's budget, and indeed the entire federal budget, in the outyears will make adequate funding for this program difficult to ensure.

GENERAL PROGRAM

Mr. Myers. If utilities were to stop making payments to the Nuclear Waste Fund, what impact would that decision have on the Department's ability to meet the milestones established by the Nuclear Waste Policy Act?

Dr. Dreyfus. If utilities stopped making payments to the Nuclear Waste Fund, the progress the Department would be able to achieve would depend on Congressional appropriations from the $4.3 billion balance in the Nuclear Waste Fund, and disposition of the $664 million debt owed to the program by the Department's defense programs.

Mr. Myers. The budget includes $10.1 million in financial assistance for the State of Nevada. This funding level represents the full amount requested by the state. What procedures did the Department use to evaluate this request and to determine that the full amount requested by the state should be appropriated?

Dr. Dreyfus. We reviewed the State of Nevada's request and the activities they propose to fund and determined that they were appropriate activities. The increase in annual amount is reasonably proportional to the increase in program funding and, hence, program activity that the State oversight function will address. I would like to insert for the record the State's justification statement and the justification for the funding of the affected counties in Nevada. The information follows:

BOB MILLER
Governor

STATE OF NEVADA

ROBERT R. LOUX
Executive Director

AGENCY FOR NUCLEAR PROJECTS
NUCLEAR WASTE PROJECT OFFICE
Capitol Complex
Carson City, Nevada 89710
Telephone: (702) 687-3744
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[illegible] Office
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October 10, 1994

Mr. Robert Nelson
Acting Associate Director
for Geologic Disposal
Yucca Mountain Project Office
U.S. Department of Energy
P.O. Box 98608
Las Vegas, Nevada 89193-8608

Dear Mr. Nelson:

Enclosed is the State of Nevada Agency for Nuclear Projects' proposed budget and program narrative for Fiscal Year 1996. The budget is in line with the amount of funds I discussed with Russ Dyer last week.

Please note that while the request is for slightly over $10.1 million for FY '96, this amount is still considerably less than what is needed for an adequate State oversight program. As we have indicated in the past, such a program would need to be funded at between $25 - $28 million.

Should you have questions concerning the FY '96 proposal or need additional information, please let me know.

Sincerely,

Robert R. Loux
Executive Director

RRL/cs

Enclosure

STATE OF NEVADA HIGH-LEVEL NUCLEAR WASTE OVERSIGHT PROGRAM
FISCAL YEAR 1996

INTRODUCTION

The Nuclear Waste Policy Act of 1982 (PL 97-425), as amended, established a special role for states like Nevada which contain potential high-level nuclear waste repository sites. In order to assure that the federal waste disposal program would be implemented in a safe and publically acceptable manner, the Act embodied a system of checks and balances whereby a potential host state was assigned an important role as overseer of the U.S. Department of Energy (DOE) program. The Act stipulates that a potential host state is entitled to federal Nuclear Waste Funds for a variety of activities related to program oversight, independent studies, and impact assessment. In 1985, the Ninth U.S. Circuit Court of Appeals ruled that the State of Nevada was entitled to broad discretion in defining and carrying out these oversight and related activities.

The Act established this extraordinary role for potential host states in an attempt to build public trust and confidence in the federal agency's ability to safely manage and dispose of highly radioactive materials. The Act explicitly acknowledged that past federal efforts to address the problem had not been successful, and that public confidence in the program was essential if the process set forth in the Act was to be successful.

Nevada Agency for Nuclear Projects
Nuclear Waste Project Office

The Nevada Nuclear Waste Project Office was formally established by executive policy in 1983 following passage of the original Nuclear Waste Policy Act of 1982. That Act provides for the systematic siting, construction, operation and closure of high-level nuclear waste repositories. In accord with the provisions of the Act, the Secretary of Energy identified Yucca Mountain in Southern Nevada as a potentially acceptable site for a geologic repository in 1984.

The 1985 Nevada State Legislature formally established the Nevada Agency for Nuclear Projects as a distinct and statutorily authorized agency. That Legislature not only provided for the operational aspects of the Agency, but also created a Commission on Nuclear Projects to support the work of the Agency and provide guidance to the Governor and State Legislature on matters concerning the high-level nuclear waste program. Specific statutory authority for the Agency and the Commission is contained in NRS 459.

In December, 1987, Congress passed the Nuclear Waste Policy Amendments Act of 1987 (NWPAA) which eliminated potential repository sites in Texas and Washington from further consideration, canceled the program to site a second repository in the eastern part of the country and identified Yucca Mountain in Nevada as the only site to be evaluated for suitability as a possible repository location. The NWPAA, which was signed into law by President Reagan on December, 22, 1987, directed the U.S. Department of Energy (DOE) to study Yucca Mountain to determine if it is suitable for safely storing highly radioactive materials for thousands of years. If Yucca Mountain proved to be unsuitable, the NWPAA instructs DOE to report back to Congress for further direction.

The significance of the NWPAA, apart from singling out Yucca Mountain for site evaluation or "characterization", is that it imposes a much greater burden upon the State of Nevada and the Agency to assure that DOE's work and conclusions regarding the proposed site are sound and that the health and safety of Nevada's citizens and the State's unique environment and economy are adequately protected in the face of a single-focused federal siting program.

Mission, Critical Issues and Strategies

The mission of the Agency is to assure that the health, safety and welfare of Nevada's citizens and the State's unique environment and economy are adequately protected with regard to any federal high-level nuclear waste disposal activities in the State.

Three issues critical to the implementation of this mission have been identified:

(1) Certain inherent geologic, hydrologic and environmental characteristics of the proposed Yucca Mountain high-level nuclear waste repository site present the potential for significant public health and safety risks and for widespread environmental damage.

(2) Nevada's socioeconomic well being could be adversely affected by the location of a High-Level Nuclear Waste Repository at Yucca Mountain and by repository related activities such as the transportation of nuclear waste along the state's highways and railroads.

(3) Access to adequate federal funds for oversight of and participation in the federal high-level nuclear waste disposal program is a chronic problem that has seriously hampered the Agency's ability to carry out its federal and state statutory mandates and responsibilities.

In order to address these critical issues and to assure that the Agency's mission will be carried out effectively and efficiently, the Agency has developed the following strategies which form the basis for program planning:

(1) The Agency will implement a program of technical research focused on evaluating DOE's technical work in the areas where critical site suitability issues need to be addressed.

The proposed Yucca Mountain repository site has numerous technical and environmental characteristics which make its suitability for safely disposing of nuclear waste questionable. The health and safety of future generations of Nevadans and the quality of the environment in that region of southern Nevada may be dependent upon the ability of the State to assure that accurate and objective scientific evaluations of site suitability are undertaken as DOE proceeds with efforts to "characterize" Yucca Mountain.

(2) The Agency will continue to implement a comprehensive socioeconomic impact assessment program which will enable the State and local governments to identify potential repository-related impacts, monitor the occurrence of impacts and allow for appropriate mitigation as necessary.

A comprehensive and ongoing socioeconomic impact assessment and monitoring program is needed in order to understand the potential negative effects of a nuclear waste repository and identify methods of addressing and mitigating such effects should they occur. As long as Nevada's Yucca Mountain remains a potential repository location, the State will be at significant, albeit uncertain, socioeconomic risk.

(3) The Agency will utilize available federal funds appropriated by Congress for State oversight of the federal repository program in a manner that maximizes efficiency and targets those funds towards the most crucial aspects of the federal program.

Federal funds for overseeing DOE's nuclear waste program have been reduced over the past five years from over $15 million in FY 1988 to just $5.5 million in FY 1995, even though the Department of Energy's budget for the high-level waste program in general and Yucca Mountain activities in particular has increased substantially. In FY 1995, DOE received 40% increase in funding for OCRWM activities, from $380.7 million to $532.9 million. Between FY 1992 and FY 1995, DOE's funding for the high-level radioactive waste program increased by almost 90%.

This funding request for the State of Nevada presents a description of a realistic program of state oversight, independent studies and impact assessment sufficient to fulfill State responsibilities under the NWPA as amended and to assure that critical health and safety issues are adequately addressed in DOE's site characterization activities, given the level of effort planned by DOE in FY 1995.

ELEMENTS OF AN ADEQUATE STATE OVERSIGHT PROGRAM

Funding levels of $5.5 million per year for the State's nuclear waste program are simply inadequate to carry out the type of activities and the level of effort necessary to oversee a DOE program funded at over $500 million and $600 million for FY 1995 and FY 1996 respectively. **To date, state efforts have had to be drastically curtailed in order to make available resources stretch** over a number of crucial technical and socioeconomic areas of study.

An adequate oversight and impact assessment effort must encompass several interrelated aspects. First, there must be adequate resources to maintain Agency operations at levels to provide for adequate planning, implementation, management and supervision of needed monitoring, independent studies, impact assessment and other activities. Monitoring of DOE's on-site activities is also a critical element of oversight.

Second, there needs to be a comprehensive and focused program of high quality technical research aimed at confirming DOE findings and at investigating issues considered essential to determining the suitability of Yucca Mountain and to the health and safety interests of the State.

Third, there also needs to be an adequate program of socioeconomic, transportation and environmental studies to clearly determine likely impacts of the federal high-level waste program within Nevada and the most appropriate means for addressing those impacts.

Fourth, the State program must have the capacity to involve local governments and the public in the nuclear waste program if the goal of building public confidence in solutions to the high-level waste problem is to be attained. While the NWPAA provided for participation by formally-designated units of affected local governments, there are a number of Nevada jurisdictions and Native American communities that will be impacted by repository-related activities, such as the transportation of waste or the construction of a rail spur, which have not been (and cannot be) designated as "affected" under the provisions of the Act. The involvement of these local governments and Native American groups together with a statewide public information program are efforts that need to be undertaken by the State as part of its overall oversight program.

Agency Operations

The Nevada Agency for Nuclear Projects operates in a manner that permits flexibility in responding to the changes and uncertainties inherent in the federal repository program while affording access to the highest quality technical, socioeconomic, environmental and other resources. The Agency employs a relatively small staff to plan, manage and supervise oversight, carry out independent technical studies and impact assessments, and undertake related functions. The Agency uses Nevada universities and expert contractors and consultants to perform technical work and provide specialized expertise. This arrangement has resulted in an extremely efficient operating system, with overhead costs below 15%. It has also enabled the State to be especially responsive in implementing studies, altering priorities based on developments in the DOE program (or with respect to the regulatory agencies such as NRC and EPA), and shifting resources to meet changing program needs. The Agency's basic operations costs include the following:

Personnel Salary and Fringe Benefits

These costs include salaries and fringe benefits for 14 Agency staff and six contract employees who administer, support and manage the overall agency program. Salaries and fringe benefits are set by the Nevada Legislature for Agency employees.

Travel Costs

The Nuclear Waste repository program is a national undertaking. It is necessary for Agency staff to attend Department of Energy meetings; technical briefings; Congressional hearings; Nuclear Regulatory Commission meetings; Nuclear Waste Technical Review Board meetings and activities; meetings of the National Governor's Association Task Force on High-Level Waste Disposal; meetings with key Department of Energy contractors; meetings with other states' representatives; conferences and working sessions with academic researchers in areas of socioeconomics, transportation, environmental engineering, geotechnical, hydrological data collection, etc. In order for the Nevada Nuclear Waste Project Office to adequately assess and evaluate DOE's performance and ascertain the validity of information being generated relative to the proposed repository site in Nevada, extensive out-of-State travel will be required of the Director, Administrator of Technical Programs, Administrator of Planning, and other professional staff and contract employees.

In addition, close coordination with the U.S. Department of Energy offices in Las Vegas is essential if the Agency is to fulfill its mission in providing oversight and independent evaluation of DOE activities regarding the potential radioactive waste repository site at Yucca Mountain. Staff from the State office will be required to meet on a regular basis with DOE Nevada staff and DOE contractors. Such meetings will include technical reviews, project updates, joint planning sessions, independent evaluations at the site and at DOE and contractors' offices, among others.

The Agency also needs to work closely with local governments throughout the state in planning and implementing socioeconomic and transportation impact studies as well as informational briefings, public meetings, etc., regarding all aspects of the repository program. Significant staff travel is anticipated to assist local governments, Indian Tribes and others in preparing for and participating in the impact assessment process for Yucca Mountain. On-going State technical studies as well as the need to oversee and monitor increased U.S. DOE site activities will require extensive travel to southern Nevada. In addition, members of the Commission on Nuclear Projects will be required to travel in-State to attend Commission meetings, public informational presentations and sessions, meetings with DOE and other federal agencies and other activities. Agency efforts in the areas of socioeconomic impact assessment and transportation analysis will also require increased in-State travel.

General Operating Expenses

Basic expenses associated with Agency operations include Office Supplies, telephone and communications, printing and copying, insurance, equipment maintenance and repair, facility rent, advertising, vehicle operations, support services, postage and mailing, dues and registrations, publications and periodicals, and equipment and space rentals. Projections relative to operating expenses for the Agency for FY 1994 are consistent with and based on historical costs for operating the program adjusted for the projected increase in the agency budget overall.

Equipment

The Agency anticipates purchasing equipment necessary to support staff and contract employees to meet requirements of technical, socioeconomic, transportation, public information and environmental efforts. Expanding technical program needs and the requirements of the Agency's socioeconomic, transportation, public information and environmental efforts require that the Agency continually increase the information management, data analysis, and information storage capabilities currently available. Consequently, the Agency will need to procure additional computer equipment, filing cabinets, bookcases, utility cases, and other related equipment.

Training

Given the demands placed on Agency staff (especially clerical staff) by the nature of the work of the Office, a small amount of money is set aside during each year to assist staff in upgrading skills and knowledge in work-related areas. Such training is considered important for the efficient operations of the Agency and represents an investment in staff development.

Regulatory, Licensing and Legal Consulting Services

Regulatory, licensing and legal services are required beyond those provided by the Deputy Attorney General in order to effectively participate in various aspects of the high-level radioactive waste program. This is an important support service required for Agency operations and for the effective implementation of oversight, impact assessment and monitoring programs. Services supporting Agency interaction with the Nuclear Regulatory Commission are critical to the State in such activities as licensing reform activities, modifications to the high-level waste licensing process, development of licensing support systems and requirements for quality assurance programs. The 1992 National Energy Policy Act also makes substantial changes in federal legislation with implications for Nevada. Research is expected to be extensive in analyzing these implications and incorporating them into State program planning and implementation. Additional activities include review of various environmental documents, site characterization plans, various monitoring and mitigation plans and representing the State before various Federal regulatory agencies.

NOTE: Work in this area does not involve litigation or litigation-related expenses. The Ninth U.S. Court of Appeals has ruled that nuclear waste funds cannot be used for litigating the federal government.

Technical Oversight and Independent Studies

In order to obtain the technical and other specialized expertise required for the Agency to carry out its responsibilities under NRS 459 and the Nuclear Waste Policy Act, a number of contracts will be executed for services ranging from geologic and hydrologic testing and evaluation to on-site surveillance and other program-related tasks. Due to the highly technical and extremely diverse nature of the waste disposal program, it is not practical or efficient for the Agency to attempt to employ staff to perform all the technical and specialized work required. Instead, it is the policy of the Agency to utilize State contracting procedures to obtain the best expertise available in each area of endeavor and to utilize the relatively small professional staff maintained by the Agency to plan, coordinate and supervise contractor activities.

Whenever possible, it is the policy of the Agency to utilize State agencies and the University of Nevada System (UNS) in providing needed contractual services. To date, agreements have been executed with a number of State agencies and with UNS entities at UNR, UNLV and the Desert Research Institute. Because of the nature of the work and the nuclear waste issue itself, required expertise is often not available within the State or University systems. In such instances, contracts with in-state private firms or out-of-State firms/universities are sought to provide required services. As of the end of FY 1993, the Agency and its contractors had produced several hundred technical reports on scientific research, progress reports on continuing research, numerous professional society and journal publications, and numerous detailed technical reviews of DOE study plans and reports.

Geology

Key technical issues in geology involve the activity of faults at Yucca Mountain and the relation to the regional tectonic setting, potential for renewed volcanism, tuff rock stability and the natural resource potential of Yucca Mountain. Contractors will review the geologic plans and on-going studies of DOE's Yucca Mountain project and conduct independent confirmation research related to various technical issues:

- A key issue is the identification of active and potentially active faults in the Yucca Mountain area and assessment of potential affects on site safety. Geological mapping of faults and Quaternary stratigraphy, trenching across suspected faults, and age-dating of fault movement are standard techniques for evaluating fault activity. Study was initiated in FY 1987 with geologic mapping in the Yucca Mountain area and at analog sites of historic fault activity in Dixie Valley and at Cedar Mountain. Detailed mapping of existing trenches on Yucca Mountain was completed during FY 1992, as were refinement of Quaternary stratigraphy at Yucca Mountain and analysis of analog site studies. In FY 1996, the State plans an expanded program of faulting studies together with intensive review of new DOE trenching activities and a refinement of Quaternary fault models of the site. This program is conducted jointly by the Nevada Bureau of Mines and Geology and the University on Nevada, Reno.

- Evaluation of earthquake activity at Yucca Mountain was initiated in FY 1987. Installation of seismic monitoring stations to supplement the federal Southern Nevada Earthquake Monitoring Network has been restricted to four stations due to access restrictions and funding limitations. Progress on analysis of existing data has been slow due to problems with DOE release of data. Work on earthquake strong motion data was halted because of security restrictions placed on the information by DOE. During FY 1991 a low-earthquake magnitude noise survey was conducted at Yucca Mountain in order to detect, if possible, the presence of small magnitude earthquakes. As a result of the survey, a six-station microseismic array was installed at Yucca Mountain. On June

29, 1992, a moderate-size earthquake occurred in the Yucca Mountain area. The State is conducting extensive analysis of data from the earthquake and its aftershocks. Data will be compared to other recorded earthquakes and previous models of tectonic activity in southern Nevada. The State plans to perform an aerial photography analysis of the earthquake epicentral area to establish evidence of a paleoseismic history. Completion of the high-gain seismic monitoring stations is also required to provide State researchers with accurate and reliable data currently not available through the DOE program. The Seismology Laboratory, University of Nevada, Reno is conducting this research.

Understanding of the regional tectonic setting provides important information for assessing present and future fault and earthquake activity and location. Field mapping combined with high resolution satellite imagery and three-dimensional computer modeling are used to identify, locate, and evaluate patterns of geologic structures and faults. Field mapping began in FY 1987, with a number of individual projects completed during the FY 1991 - 1992. The June 1992 earthquake has necessitated a re-analysis of current tectonic models and a revision of the present field mapping strategy to include mapping at Skull Mountain and Little Skull Mountain. The reanalysis is planned to continue and intensify in FY 1996. The State also plans to incorporate volcanic processes into tectonic model efforts. The Center for Neotectonic Studies, University of Nevada, Reno has responsibility for these studies.

Mapping, geochemical sampling, and age dating of young volcanic rocks in southern Nevada was initiated in FY 1987 and was proposed to be completed by the end of FY 1991. Funding limitations have slowed progress. Based upon this previous work, a study was initiated in FY 1990 to assess the volcanic craters in Crater Flat adjacent to Yucca Mountain to eventually define the risk of future volcanism to the repository. Structural geology mapping, which may assist in understanding the mechanisms of young volcanos in Crater Flat, began in FY 1991 and was completed in FY 1993. Emphasis in FY 1994 was on identification and mapping of basalt and rhyolitic dikes and sills in the Yucca Mountain area and the structural significance of these features. The Crater Flat study will be expanded and continued through FY 1995. New advances in age-dating techniques have occurred in the last decade. Starting in FY 1995, all young volcanic centers in southern Nevada will be re-sampled and age-dated using the latest techniques. Another activity initiated in FY 1991 was a review and analysis of probability and statistical theory related to defining risk from natural events, such as the probability of volcanic eruption. Refinements of probability and sensitivity analyses are planned for FY 1996. These activities represent a collaborative effort on the part of the Center for Volcanic Studies and the Department of Mathematical Sciences, both at the University of Nevada, Las Vegas.

- Associated with understanding the tectonic setting and the earthquake processes acting in the setting are studies of the mechanisms of faulting and the stresses on the rocks of Yucca Mountain from such faulting. These studies will provide data to establish the maximum earthquake for engineering design purposes and to determine the strains placed on the repository rock from earthquakes and fault movement. Such studies were initiated at a minimal level following the June 1992 earthquake. Studies were expanded and intensified in FY 1994 and will continue in FY 1996, especially given the lack of established standards for repository system performance related to earthquake stresses and magnitudes. The State must understand what large event earthquakes could mean with respect to the repository and related system components. This is a joint project of the Nevada Bureau of Mines and Geology and the Center for Neotectonic Studies at the University of Nevada, Reno.

- Concern has been expressed that the presence of natural resources at or near Yucca Mountain could be an attractor for subsurface drilling or excavation by future explorationists. In FY 1987 an evaluation program was initiated to assess the presence or absence of economic minerals and/or hydrocarbons in the Yucca Mountain area. Past work has included field mapping and sampling, and development of conceptual models. Access to subsurface drillhole samples were obtained in late 1992. Detailed laboratory analysis progressed in 1994. FY 1996 activities include additional mapping, continued laboratory study of samples, and collection of additional samples from the DOE drilling program. This work is important to the State's participation in the National Academy of Sciences, EPA and NRC activities associated with human intrusion. The Mackay School of Mines, University of Nevada, Reno is responsible for these studies.

- Oversight of DOE's presently-issued study plans and FY 1991 and FY 1992 field activities reveal gaps and questions related to the surface geologic mapping of Yucca Mountain. Detailed mapping has indicated a more complex pattern of faulting than presented in current DOE efforts, the Environmental Assessment, the Site Characterization Plan, and the Early Site Suitability Evaluation. However, current DOE study plans do not suggest that DOE intends to review in detail or remap the geology of Yucca Mountain. As a result, the Agency proposes in FY 1996 to initiate a complete remapping of the surface geology of Yucca Mountain.

Hydrogeology

Key technical issues in hydrogeology are moisture movement in the unsaturated zone, relation of the local groundwater aquifer to the regional flow system, and future hydrogeologic conditions at Yucca Mountain. State contractors will review the hydrogeologic studies of DOE's Yucca Mountain Project, monitor field and laboratory activities, and conduct independent confirmation research related to technical issues.

Technical review and monitoring of the Yucca Mountain Project began in 1984. Various independent research projects were funded in 1986 and some were completed during the 1989 - 1990 period (i.e., an inventory of applicable hydrogeologic codes and a preliminary ground water quality model for Yucca Mountain). Other projects were not started or completed due to restricted funding and are proposed to be initiated or continued during FY 1996.

The following studies are designed to address aspects of the key hydrogeologic issues considered critical to the State's oversight effort:

- Evaluation of the unsaturated zone above the groundwater table is important in understanding hydrologic conditions, determining the groundwater travel time to the biosphere and defining hydrology's contribution to assessing the site's performance. Analysis of rock and fracture properties began in 1987. Analysis of ground water levels and their variances began in 1988. Analysis of moisture monitoring instrumentation data from DOE-constructed wells also began in 1988. In 1993 DOE began construction of additional water-monitoring wells, and that construction is scheduled to continue into the FY 1996 period. State analysis will continue and intensify as data from the new wells become available. In addition, work on development of conceptual unsaturated zone flow models will be expanded. The Water Resources Center at the Desert Research Institute is responsible for this analysis.

- Studies of past weather patterns in Southern Nevada as a precursor for predicting future weather patterns will provide input data for modeling recharge patterns to the hydrologic system and for predicting future changes in groundwater levels. Historical data collection was initiated in FY 1987 and was completed in FY 1991. A review of applicable codes to model weather patterns began in FY 1990 and is continuing. Additional new research into the use of environmental isotopes to predict weather patterns is underway and will continue in FY 1996. The Water Resources Center at the Desert Research Institute will conduct this research.

- A review of past climatic conditions in Southern Nevada provides a clue as to what future climates might be predicted. This prediction provides input data to modeling future water levels at the site and predicting rates of surface erosion. Field mapping of past spring and lake deposits, mapping of past vegetation patterns, and geochemical analysis and age dating of water-deposited materials provide data for predicting future climatic conditions. Some such studies began in FY 1988 on a limited basis and are continuing. This work will be expanded and intensified in FY 1996 with additional funding. These studies would be conducted through a collaborative effort on the part of the Desert Research Institute and private sector researchers.

- An assessment of the relationship of the Yucca Mountain aquifer to the regional groundwater flow system is key to understanding future changes to the ground water system and to evaluate the future water supply potential. Such assessment involves a number of study approaches. Modeling of water chemistry to predict the degree of water mixing from both flow systems is one study approach. Sampling for chemistry was done in FY 1988 - FY 1989. Additional sampling , together with analysis and modeling is underway as sample-splits are available from the DOE surface-based drilling program. Sample-splits will be gathered from any ESF excavation moisture occurrences. Modeling of environmental isotopes contained in the groundwater is another study approach. Computer codes for modeling were developed in FY 1988; field sampling and laboratory analysis was initiated in FY 1989. Funding limitations have restricted progress since 1988. With additional funds, sampling and data analysis would be re-initiated in FY 1996. These studies would be performed through a collaborative effort on the part of the Desert Research Institute and private sector scientists.

- Validation studies of hydrogeologic models and computer codes proposed for use by the DOE during site characterization was initiated in FY 1988. A complete inventory of all applicable computer codes has been compiled. Systematic review and evaluation of the codes began in FY 1989 and will continue through FY 1996. This review also involves interaction with other countries involved in validation studies of hydrogeologic models and computer codes, like the past work of the INTRAVAL model validation group. Monitoring and review of hydrogeologic models and computer codes is an on-going process and will continue. Private sector modelling specialists are performing these reviews.

- Geochemical studies are a major component of the State's technical assessment of the Yucca Mountain Site. Geochemistry of rock-water interaction at both present temperature and anticipated repository temperatures is the focus of the studies. Secondary minerals within the tuff volcanic rock may alter contaminant transport mechanisms by retarding radionuclide migration. Secondary minerals are being evaluated for their chemical composition, stability states, and potential for alteration at elevated temperatures. Also the degree which these secondary minerals take up radionuclides transported in the groundwater are also being studied. Other studies are reviewing the degree of alteration which may occur in the repository rock from thermal water from either volcanic emanations or from the postclosure repository environment. Past and present activities have been largely restricted to monitoring DOE work and reviewing the scientific literature. Additional funding would allow for independent research into some of the key geochemical issues at Yucca Mountain. A collaborative effort on the part of the Desert Research Institute and private sector researchers is proposed.

- At Yucca Mountain, the water table is unusually deep. However, the site is tectonically active, and present conditions are susceptible to change. If the uncommonly deep water table were to simply rise to depths more typical of the region, the proposed repository would be flooded. To assess a possible groundwater hazard, a major study is needed to address the question of whether groundwater up-welling has occurred in the past and under what conditions could it occur in the future. The study was initiated in FY 1993 with an assessment of the present knowledge of the hazard at the site. The FY 1994 study refined data gaps and knowledge uncertainties and served as the foundation for more complete, in-depth investigation of the hazard in FY 1995. Studies are planned to continue in FY 1996. Private sector contractors knowledgeable about this issue are carrying out the study.

- The State has identified the chemical characteristics of spent fuel and, particularly, high-level radioactive waste as an area which has received little attention from DOE to date. In order to understand how radioactive waste in a repository will react with the volcanic tuff and the groundwater, it is important to know and understand waste material chemistry. A low-level effort involving university laboratory research and data analysis was conducted in 1994 - 1995. Given the importance of this understanding and the inadequate attention (past, present or planned) paid to the issue by DOE, the Agency proposes to initiate a detailed review of radioactive waste chemistry in FY 1996. The review included an analysis of glass waste forms for liquid radioactive wastes. Emphasis was on radiation in the waste form chemistry and the effects of temperature on chemistry. Collaborative efforts in laboratory research between private sector scientists and university scientists is planned for FY 1996.

Engineering

In FY 1989 an engineering contractor initiated a review of the conceptual repository design for a repository at Yucca Mountain. That review was completed in FY 1990. Also, in FY 1989 the contractor initiated a review of exploratory shaft facility design. That review was completed in FY 1991. In FY 1992 DOE changed the exploratory design from shafts to subsurface ramps. In addition, the designs for the repository itself remain in flux, with considerable uncertainties associated with almost every engineering aspect. DOE's excavation of the exploratory underground facility was initiated in FY 1995. State engineering activities will focus on monitoring DOE's ESF and repository design work as it progresses and overseeing the excavation of the ESF on an on-going basis.

Quality Assurance

In 1988, the Agency's quality assurance program for technical studies received approval from the NRC as being acceptable for nuclear facility programs. The Agency conducts audits and surveillance of its contractors' technical work. In addition, the Agency monitors DOE and its contractors' adherence to quality assurance. A requirement of the Agency's QA program is that there be an independent management assessment of Agency adherence to the program.

Technical Advisors

The Agency utilizes a number of technical advisors to assist staff in overseeing technical activities and in reviewing and monitoring DOE technical work, reports and planning. Such technical expertise is drawn from around the country and is clearly and purposely organized so as to provide the State with the highest quality technical advice and support in areas crucial to the statutorily-mandated mission of the Agency. These technical advisors form an integral part of the Agency's technical oversight capabilities and are essential to the State's ability to participate, meaningfully, in the repository program and to develop and implement the high-quality and comprehensive oversight programs needed to carry out State responsibilities under the NWPA, the NWPAA and State law.

Technical advisors required during the next fiscal year are as follows:

Hydrology Advisor

Contractor provides advice and guidance to the Agency on hydrogeology issues, direction and scope of State hydrogeology program, scope of the DOE program and potential repository licensing issues. Contractor informs the Agency on progress in hydrogeology by other countries. The Contractor also reviews technical progress of State hydrogeology program. At the direction of the Office, technical reviews of DOE and NRC program documents are provided.

Geology Advisor

Contractor provides advice and guidance to the Agency on geology issues, direction and scope of State geology review program, scope of DOE program and potential repository licensing issues. The contractor also reviews technical progress of State geology program. At the direction of the Office, selected technical reviews of DOE and NRC program documents are performed.

On Site Monitoring Program

During the FY 1992-93 biennium period, the DOE initiated limited field activities at the site. The activities involved drilling of shallow and deep boreholes, trenching across known faults, excavation of test pits for stratigraphic studies and defining soil conditions, and detailed mapping along known or suspected faults. The Agency monitored those field activities on a part-time basis with existing personnel. In FY 1994, the level of site characterization work increased markedly. The Agency procured a contractor to provide full-time, on-site monitoring capability in order to carry out the State's oversight functions as provided for in the NWPA as amended. The contractor, with required expertise in geology, hydrology, geochemistry, and civil engineering, oversees DOE's field and laboratory activities and reports progress and problems to the Agency. The Agency coordinates site monitoring with affected local governments which have on-site representation as well as with the NRC's on-site representative.

Socioeconomic, Transportation and Environmental Studies

Section 116 (c) of the Nuclear Waste Policy Act as amended provides that the Secretary of Energy shall make grants to the State of Nevada for the purposes of enabling the State "to review activities taken under this subtitle with respect to the Yucca Mountain site for the purpose of determining any potential economic, social, public health and safety, and environmental impacts of such repository on such State or affected unit of local government and its residents." The same section of the Act specifies that funds will also be available to develop a request for "impact assistance" for impacts associated with the proposed repository or site characterization activities. The Agency requires adequate funding to carry out programs of impact assessment and to adequately assess the need for impact assistance as provided for in the Act.

Socioeconomic Impact Assessment

Since 1986, the Agency has been engaged in studying possible socioeconomic impacts associated with the proposed Yucca Mountain repository and related high-level waste transportation through the state. A study team of researchers from universities and firms around the nation has conducted extensive studies and developed baseline data relative to the facility and its effects on the State of Nevada, local communities and Indian Tribes.

Research and data collection involved economic-demographic, sociocultural, Native American, risk assessment/risk management, and risk perception/behavior areas of study. Geographically, the research involved Nye, Clark, Lincoln and Esmeralda counties plus the State of Nevada as a whole. As of the end of FY 1993, the State's socioeconomic study had produced fifty-seven published reports addressing various aspects of impacts and impact assessment related to Yucca Mountain. These included an Interim Report on Yucca Mountain Impacts and a Research Summary of socioeconomic studies between 1986 and 1992.

In 1989, the research team produced the Interim Report on the State of Nevada Socioeconomic Studies which summarized and integrated the findings of research to date. That report concluded that, while standard (population/employment-driven) effects of the project could result in some negative impacts to the state and local communities, the greatest threat from the high-level nuclear waste project was from the potential for risk-induced effects. The report found that these risk induced effects could result in Nevada's (and Las Vegas') image being negatively associated with the repository so that Nevada and Las Vegas become less attractive places to visit, locate a business, or live. The resulting impacts on the State's economy and way of life could be significant, especially in the event of high-level waste transportation accidents or media amplification of repository accidents or controversies.

Following the release of the Interim Report, a Technical Review Committee (TRC), comprised of nationally-recognized experts in various socioeconomic disciplines and established by the Agency to provide peer review and oversight for the study, undertook a formal review of the document and the research that went into producing it. The Committee concurred with research findings that the designation of Yucca Mountain as a potential repository site has already had significant impacts on Nevada, and that the actual development of a repository at the site could have a profound effect upon the economy and quality of life of people of the region.

As a result of findings in the Interim Report and the Technical Review Committee's response to that document, the Agency designed and executed a series of additional studies intended to further investigate potential economic-demographic, social cultural and risk-related impacts identified in the Interim Report and subsequent review process. A program of research begun in September, 1989 resulted in the development of summary reports on project description variables, economic modelling, repository effects on the urban Las Vegas area, repository impacts to rural communities near Yucca Mountain, possible effects to Native American communities and culture, repository impacts to Nevada's tourism and convention industries, and a comparative analysis of risk management in the U.S. and international high-level waste disposal programs.

To follow-up and continue past socioeconomic study efforts, the Agency will contract for services related to: (1) monitoring key variables and indicators to track the occurrence, magnitude and duration of significant impacts associated with the characterization of Yucca Mountain as a potential nuclear waste repository; (2) ongoing assessment of possible impacts associated with the operation of a repository at Yucca Mountain or transportation of nuclear waste associated with a repository; (3) continuing development and refinement of an adequate project description system; and (4) continuing specialized research into the mechanisms by which risk induced impacts may operate and the potential for affecting Nevada's economy and citizens. Work in this area of the State program includes:

- Identifying, through a careful review of prior research and findings, key indicators of significant impacts in the economic-demographic, socio-cultural and risk related areas during site characterization.

- Development and maintenance of a State-level monitoring system that will be able to track areas of potentially significant site characterization impacts in such a way as to enable the State to address impacts before they cause economic or social damage.

- Development and maintenance of baseline data sufficient to enable comparisons of with-project and without-project futures for assessing impacts associated with construction and operation of the proposed repository.

- Development and maintenance of systems capable of using the baseline data and making predictions about future conditions with and without the repository in Nevada.

- Development and maintenance of systems capable of making predictions about risk induced effects on populations external to Nevada which are of significant economic importance to the State. These include important tourist populations (i.e., southern Californians and others), associations and groups important the convention industry, potential target businesses and industries, and populations considered potential inmigrants to Nevada (retirees, etc.).

- Continuing development and maintenance of an adequate project description for the Yucca Mountain program and a system for utilizing project description information to account for the large uncertainties associated with the program.

- Facilitate access to and use of the project description system by State agencies and affected local governments and tribes as appropriate.

- Continue a program of specialized studies into the areas of risk perceptions, risk behavior, image effects, risk management and related phenomenon.

- Maintain a research team with expertise and experience in the area of risk studies and insure that research findings are exposed to rigorous peer review.

- Coordinate with DOE socioeconomic activities as appropriate and Oversee DOE's socioeconomic program

- Coordinate and integrate socioeconomic studies and impact assessment efforts of affected local governments with the State's program and studies.

- Design and implement a program for the identification and monitoring health effects for communities proximate to the Yucca Mountain site or potential highway and rail routes for high-level radioactive waste shipments.

Transportation Assessment

Transportation issues remain very important to the State and local communities and may well be the most visible and dramatic "driver" of potential repository impacts for Nevada. Despite the central role transportation plays in the nuclear waste disposal issue, however, little progress has been made by DOE or the federal government in addressing key transportation matters. Agency efforts, although hampered by congressional budget cuts, have attempted to address key aspects of nuclear waste transportation planning.

The Agency for Nuclear Projects utilized the University of Nevada Las Vegas College of Engineering Transportation Research Center (UNLV/TRC) for a number of important high-level waste transportation analysis function during the biennium. The UNLV/TRC, under contract to the Agency, developed a Transportation Management Information and Analysis System (TMIAS) which has been used to evaluate transportation routes within the state and to provide access to necessary information and analysis capabilities relative to nuclear and hazardous materials transportation.

Using TMIAS capabilities, UNLV/TRC prepared a draft Preliminary Nevada High-Level Nuclear Waste Transportation Route Characterization and Risk Analysis. This report analyzed the two major highway routes identified by the Nevada Department of Transportation as likely high-level waste shipping routes. It also analyzed the three rail spur routes identified as preferred by DOE in its Preliminary Rail Access Study.

In addition to work done through the UNLV/TRC, the Agency has also undertaken a number of other studies designed to better understand nuclear waste transportation issues and evaluate key aspects of DOE's transportation work. These studies include:

- A study on Human and Social Factors in HLW Transportation
- A Critique of the Nuclear Regulatory Commission's Modal Study (the NRC study of cask performance under accident conditions).
- A Review of Several Programs for Transportation Package Testing in U.S. and Abroad
- A Study of Transportation Issues Associated with At-Reactor Spent Fuel Storage
- A review of the Physical Protection (Safeguards) Requirements for Spent Fuel Shipments
- An appraisal of Comprehensive Risk Assessment Approaches in HLW Transportation
- An Analysis of DOE's latest version of the RADTRAN computer risk assessment model
- An Analysis of Sabotage involving Explosives and the Implications for HLW shipments.
- A review of the implications of various proposals for reauthorizing the federal Hazardous Materials Transportation Act.

During FY 1996, the Agency will continue to expand its transportation analyses in coordination with the State Department of Transportation, affected local governmental entities, regional transportation commissions, the University of Nevada System, other State agencies and the Legislative Study Committee on High-Level Radioactive Waste. Numerous aspects of the Agency's activities in this regard will require use of contractual services. The University of Nevada, Las Vegas Transportation Research Center will continue to be the Agency's principal transportation contractor and will be funded to carry out transportation impact assessment efforts compatible with the State's socioeconomic impact assessment studies. A breakdown of the general transportation study areas is as follows:

- ongoing review of federal and State transportation laws, regulations, etc., together with a review of specific federal and State agencies' roles and responsibilities relative to HLW transportation issues;
- technical review of DOE's risk methodologies, computer models and other relevant analytical approaches to HLW transportation issues;
- design and implementation of Nevada-specific risk analyses, including the application of various risk models to specific highway and rail routes within Nevada;
- the continued development of Nevada-specific data bases relative to HLW transportation information and variables and Nevada-specific route analyses, including route surveys and the development of methodologies for monitoring changing route conditions, etc.;
- issue-specific studies aimed at providing the State and local governments with data and expertise relative to areas of HLW transportation that may be required to enable informed participation in DOE transportation decision making. Issues to be investigated include inspection and enforcement, liability, cask design, notification, overweight trucks and national route selection;
- the ongoing assessment of emergency preparedness conditions and needs within the State so that adequate planning can be done relative to repository-related HLW transportation;
- the continued evaluation of DOE's proposed rail access corridors connecting Yucca Mountain with mainline railroads (all DOE proposals require the construction of between 120 and 500 miles of new rail line);
- the continued evaluation of DOE's cask design process including the assessment of the quality and adequacy of designs for highway and rail shipping casks, with emphasis on DOE's proposed Multiple Purpose Canister program and its implications for waste transportation;
- the examination of regional transportation issues such as route conditions and coordination of regional transportation activities; and

- other studies that may be needed to review DOE transportation documents, coordinate Nevada's transportation-related activities with other states, develop technical HLW transportation-related informational materials, etc.

Environmental Monitoring and Assessment

The Agency's current environmental program was initiated in FY 1989. An inventory of existing information was developed and analyzed, and a plan for conducting a comprehensive environmental baseline survey was prepared. A complimentary activity documented past site disturbances and recommended alternative strategies and studies to reclaim the site. Funding limitations and protracted site access negotiations restricted site environmental surveys to two short surveys in 1989 and 1990. Activities in FY 1992, FY 1993 and FY 1994 focused on review and evaluation of the DOE environmental program and monitoring field surveys.

The Agency's comprehensive environmental oversight program for DOE site characterization activities at Yucca Mountain consists of the following activities:

- review of available information on the Yucca Mountain environment to determine the extent of existing information useful for evaluating the site's environment.

- develop and implement plans for a field study to provide additional environmental information needed to evaluate the site.

- conduct a comprehensive environmental survey drawing upon findings of review of available information and the field study to provide the basis for evaluating potential adverse environmental impacts based upon descriptions provided by DOE of activities to be conducted during site characterization.

- review the preliminary environmental impact analyses performed by DOE.

- conduct environmental oversight, including impact monitoring and mitigation, of the DOE program for site characterization based upon the environmental survey and the impact evaluation carried out in the first two years of the Agency's environmental program.

In FY 1996, the Agency plans to expand its environmental program to increase on-site monitoring of DOE's environmental activities and to initiate independent research relative to methods of site reclamation. Also in FY 1996, the Agency, because of emerging concerns about the negative effects of DOE's proposed thermal loading strategy on the terrestrial ecosystem, plans to initiate studies relative to thermal effects.

Planning/Socioeconomic Advisor

The Agency utilizes specialized contractors to assist in providing technical oversight with regard to socioeconomic, transportation and institutional issues; help coordinate in-State resources available to conduct major socioeconomic studies; advise the Agency on direction and scope of these studies; advise the Agency on status and direction of issues and programs in other states and help coordinate Nevada's efforts with those of other affected states; and serve as liaison with the broader scientific and academic communities, including the Technical Review Committee comprised of nationally-recognized experts in various fields.

Technical Review Committee

The Agency has established a panel of nationally-recognized experts to oversee socioeconomic, transportation and related technical research activities. This 10 - 12 member committee provides high quality peer review for studies that are undertaken and assures that the Agency's work meets the highest standards.

Local Government, Legislature, State Agencies and Public Involvement and Coordination

While the NWPAA provided for participation by formally-designated units of affected local governments, there are a number of Nevada jurisdictions and Native American communities that will be impacted by repository-related activities, such as the transportation of waste or the construction of a rail spur, which have not been (and cannot be) designated as "affected" under the provisions of the Act. The involvement of these local governments and Native American groups needs to be facilitated by the State as part of its overall oversight program. In addition, the Agency for Nuclear Projects is responsible for coordinating the involvement of other state agencies in the HLW program and for implementing a program of public information and participation.

Local Government Participation

Facilitating meaningful local government and Native American participation in State and federal programs and decision-making relative to the high-level waste disposal program remains a cornerstone of the State's effort. The State of Nevada is committed to active and direct involvement of local governmental and Native American entities potentially affected by the Yucca Mountain project. The State intends to continue to fund the activities of such local governments/Native American groups in Nevada not formally designated under the NWPAA in order to effectuate their involvement in the program through attendance at various State, regional and national meetings and by providing for the establishment and maintenance of planning and policy analysis capabilities at the local level, as needed.

Although changes in the Nuclear Waste Policy Act provide for direct federal funding to certain local governments (i.e., those counties which are contiguous to Nye County and designated as "affected" by DOE), the Agency remains the principal source of funding for jurisdictions such as the cities of Las Vegas, North Las Vegas, and Henderson, and affected Indian Tribes within Nevada. In addition, local jurisdictions/tribes located along potential high-level waste transportation routes require financial assistance to plan effectively for transportation impacts and to participate in State and federal repository-related programs.

In 1984, the Agency established a State/Local Government Planning Group (SLGPG) to help coordinate oversight and impact assessment activities of the various affected parties. This Group has assisted the Agency in planning socioeconomic and transportation studies and has served as a forum for sharing information on technical issues and programs as well as other matters important to affected entities. With the expansion of the SLGPG as a result of DOE's designation of 10 affected counties and the recognition of other jurisdictions as potentially impacted by repository-related activities, there is a need to devote additional efforts to the coordination functions embodied by this Group. During FY 1996, the Agency proposes to engage a contractor to serve an informal support function for this Group.

Nevada Legislature Participation

Funds are needed to provide for the involvement of the Nevada State Legislature in the high-level nuclear waste management program. Specifically, the Nevada Legislature has established a Committee to analyze and participate in both the State executive and federal programs. The Committee was made permanent by the 1985 Legislature and will require continued annual funding.

Other State Agencies

During site characterization, a number of State agencies need to be involved in overseeing and/or monitoring specific aspects of DOE activities and in reviewing DOE's Site Characterization Plan and related documents. Agencies such as the Division of Industrial Relations (Mine Inspection), the Department of Transportation, the Division of Emergency Management, the Public Service Commission, the Division of Historic Preservation and Archeology, the Division of Environmental Protection and others may require funding to allow those agencies to carry out their appropriate oversight of regulatory roles and to assist the Agency in executing State mandates and responsibilities under the NWPA. The Agency also provides funds to the State Employment Security Division Research

Section to maintain and utilize the REMI economic forecasting model as part of the Agency's socioeconomic impact assessment work.

As DOE's site characterization work intensifies, the involvement and participation of affected State agencies will likewise increase. It is the intent of the Nuclear Waste Policy Act that costs associated with repository site characterization (as well as other repository-related costs) be borne by the generators of the waste through the Nuclear Waste Fund. Funds are required to enable the Agency to provide needed resources to State agencies which incur costs that would not otherwise be incurred except for the repository project.

In addition, the Agency works with and funds the University of Nevada System to assist in the implementation of the Agency's public information program. Specifically, the UNS will assist in implementing lecture series regarding nuclear waste disposal, in general, and Yucca Mountain, in particular.

Public Information and Involvement

The Agency intends to continue its comprehensive program to provide Nevadans with information concerning the high-level nuclear waste effort. These public information activities are aimed at facilitating the active involvement of the public in the repository decision-making process. It is anticipated that a variety of contractual services will be required for information systems development, materials development, computerized information access, etc. Contract areas include:

- design, layout, graphics and coordination required for production and distribution of the State's Newsletter, fact sheets and maps;

- implementation of an effective information access system to provide citizens throughout Nevada with ready access to HLW program information;

- development of subject-specific informational materials for use by the Office in providing citizens, local governments, organizations, etc., with understandable information relative to HLW issues and the State's program;

- assistance in the development and implementation of a comprehensive program for public participation in U.S. DOE and State HLW program activities and decision-making processes, including: (1) the establishment of adequate library materials for ready public access in southern Nevada; (2) the development of publicly understandable "translations" of DOE and State technical documents, reports, etc., (including the SCP) to promote public understanding of complex and often confusing technical issues; and (3) the development of networks of civic groups and other organizations to promote public participation in the HLW program; and (4) the conduct of workshops, forums, meetings, and other events to provide opportunities for the public to better understand the program and participate in decision making, consistent with the intent of the Nuclear Waste Policy Act; and

- miscellaneous activities including facilitating public meetings, conducting seminars and bringing experts and speakers on HLW issues to Nevada for public information activities, implementing informational programs through radio and TV, etc.

SUMMARY

To effectively carry out the statutory provisions of the Nuclear Waste Policy Act of 1982, as amended, the State of Nevada, through the Nevada Agency for Nuclear Projects, must implement a multi-faceted and comprehensive program of technical oversight, on-site monitoring, independent studies and data collection, socioeconomic and environmental impact assessment and public involvement. In 1988, the Agency examined DOE's proposed site characterization program and laid out the elements that would be needed for an adequate State effort. That proposal was submitted to DOE, but never acted upon.

In the years since passage of the Nuclear Waste Policy Amendments Act in 1987, Nevada's oversight efforts have been severely hampered by funding restrictions and limitations. Even though DOE's budgets for site characterization have increased markedly since 1990, the funding level for the State program has remained stagnant and significantly below what is required.

The program described in this proposal represents an adequate State oversight effort given the level of resources expended and activity planned by DOE over the next few years.

ATTACHMENT I

BUDGET SUMMARY - FISCAL YEAR 1996

Agency Operations		
Personnel	$ 1,107,401	
Travel	95,625	
General Operating	150,600	
Equipment	75,205	
Training	15,500	
Regulatory, Licensing & Legal Support	275,000	
Sub-Total Agency Operations		$ 1,719,331
Technical Oversight & Independent Studies		
Geology	2,025,000	
Hydrogeology	2,750,000	
Engineering	200,000	
Quality Assurance	200,000	
Technical Advisors	535,000	
Sub-Total Technical Oversight		$ 5,710,000
On-Site Monitoring Program		
Site Characterization Monitoring	300,000	
Sub-total Monitoring Program		$ 300,000

Socioeconomic, Transportation & Environmental		
Socioeconomic Impact Assessment	600,000	
Transportation Assessment	300,000	
Environmental	100,000	
Planning/S.E. Advisor	80,000	
Technical Review Committee	150,000	
Sub-Total S.E., Transportation, & Environmental		**$ 1,230,000**
Local Government, Legislative, State Agencies & Public Involvement		
Local Governments	550,000	
Nevada Legislature	200,000	
Other State Agencies	100,000	
Public Information	300,000	
Sub-Total Government & Public Involvement		**$ 1,150,000**
GRAND TOTAL FY 1996 BUDGET		**$10,109,331**

NUCLEAR WASTE REPOSITORY PROJECT OFFICE
P.O. BOX 1767 • TONOPAH, NEVADA 89049
(702) 482-8183 • FAX (702) 482-9289

1-363025

October 10, 1994

Mr. Wayne N. Kosai, Program Analyst
Yucca Mountain Site Characterization Office
101 Convention Center Drive Suite P200
Las Vegas, Nevada 89109

Dear Mr. Kosai:

Per the agreement at the September 15, 1994 meeting of the Affected Units of Local Government (AULG) with the Yucca Mountain Site Characterization Office, please find enclosed a description of the AULG program plans for FY96. We understand that this description will be used to support further Departmental and Office of Management and Budget consideration of AULG financial assistance needs to carry-out our monitoring and oversight programs.

Should you have any questions concerning this material, please do not hesitate to contact me or any of the other AULG representatives.

Very truly yours,

Les W. Bradshaw

Les W. Bradshaw, Project Manager
Nuclear Waste Repository Project Office

cc: Greg Cook
Wolf Repke
Affected Units of Local Government

BUDGET REQUEST
FY 1996

AFFECTED UNITS OF LOCAL GOVERNMENT
YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT

Pursuant to Section 116(c) - Financial Assistance
Nuclear Waste Policy Amendments Act of 1987

October 1994

OVERVIEW

The Nuclear Waste Policy Act, as amended, provides for "affected units of local government" in the vicinity of Yucca Mountain to oversee and participate in the Yucca Mountain Site Characterization Project. Nine counties in Nevada and one county in California have been designated as affected units of local government[1] These counties are eligible to receive financial assistance for a variety of activities, including:

- Monitoring, testing, or evaluating activities with respect to site characterization
- Assessing impacts of site characterization and repository development
- Making recommendations to the Secretary of Energy
- Submitting claims for impact mitigation or compensation assistance.

DOE's civilian radioactive waste management program is undergoing significant changes that will impose new and unprecedented demands on the counties' oversight programs. The following expected developments have influenced the counties' planning for FY96:

- A large increase in OCRWM funding will accelerate activities at Yucca Mountain.

- The counties must confront and prepare for a range of alternative futures; since OCRWM's repository strategy has been in a constant flux, the regulatory regime remains undefined, and the OCRWM program's statutory underpinning is expected to be modified in the next Congressional session, the counties must conservatively address the uncertainties by being prepared to address a range of contingencies.

- For example, OCRWM is considering a revised "Proposed Program Approach" that entails major changes in the approach to site characterization and licensing. In particular, OCRWM proposes to make a formal determination of site suitability by 1998 on the basis of much less data than previously planned. This change will have a major impact on the counties' willingness to rely predominantly on expert judgement and modeling for their understanding of Yucca Mountain prior to licensing. Independent scientific investigation is taking on increased priority with Nye County, in particular, as OCRWM shifts from comprehensive site characterization to post-licensing confirmatory testing.

- OCRWM will undertake two major NEPA actions in FY96: scoping for the multi-purpose canister EIS and Yucca Mountain EIS, and issuing the draft multi-purpose canister EIS.

- Congress will revisit national nuclear waste management policy during FY96, and is likely to consider long-term program funding and management, radiation protection standards, and interim storage.

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[1] The situs jurisdiction, Nye County, is specified by the NWPA, as amended. Churchill, Clark, Esmeralda, Eureka, Lander, Lincoln, Mineral, and White Pine Counties in Nevada, and Inyo County, California have been designated by the Secretary of Energy.

These developments mean that the affected counties will face a much different waste management program in FY 1996 from what they have faced in previous years. In response, the scope and scale of the counties' activities must expand to accommodate new program realities. The budget requirements described herein are, therefore, based on county needs as induced by the uncertainty of the expanding, but ever-changing scope of Federal radioactive waste management activities.

This FY96 budget request is organized into eight program areas. Activities to be implemented in each of these areas are described in the remainder of this document. The counties' program areas and FY96 financial assistance needs are provided in Table 1. The affected counties emphasize that this budget request is based on an evaluation of ***program-based*** activities, not on a fixed percentage increase over funding in FY95.

TABLE 1. YUCCA MOUNTAIN AFFECTED UNITS OF LOCAL GOVERNMENT PROPOSED BUDGET FOR FY96

PROGRAM ELEMENT	FY94	FY95	FY96
Program Management	1,298,929	1,754,020	2,060,859
General Program Monitoring	828,490	1,114,149	1,267,289
Socioeconomic Monitoring/Inspection	2,087,096	2,953,851	3,046,267
Geotechnical Analysis	1,272,787	1,971,108	3,029,427
Environmental and Radiological	230,932	455,527	789,737
Transportation	688,882	902,705	1,568,717
Emergency Management	331,598	521,175	744,297
Public Information	281,286	427,465	611,154
TOTAL	7,000,000	10,100,000	13,117,747

PROGRAM AREAS

Program Management

- Each affected county has established a Yucca Mountain oversight program that is tailored to meet its unique needs and circumstances. Program management costs will be incurred in the following areas:
  - Program salary and benefits
  - Operating expenses
  - Equipment purchase or lease
  - Travel
  - Training
  - Contract management

- Each county's oversight program will continue to operate under the guidance and supervision of elected county commissions. In most counties, a citizens advisory board also provides essential input into oversight programs.

- The State, Tribal, and Local Government Coordinating Group will continue to be a primary vehicle for sharing information and experiences and for planning joint county activities. The Group will meet quarterly. Some Coordinating Group activities will be conducted through subcommittees established for Transportation and Emergency Management, and Information Systems.

General Program Monitoring, Review and Comment

- The affected counties will continue to provide detailed review and comment on a wide range of technical and policy documents produced by DOE and other organizations. Comments are shared among the counties, and with DOE and the State of Nevada.

- Most program observers agree that Congress is certain to revisit national nuclear waste management policy during FY96. The counties will expand their capabilities to monitor proposed legislation and analyze its implication for their unique interests.

- Although most program funds will be spent on operations at Yucca Mountain, meetings provide a crucial opportunity for local governments to learn about and participate in program activities. This is especially important in view of the lack of a overall planning framework for the program (such as the Mission Plan) and of a thorough description of the Proposed Program Approach. County representatives will therefore continue to attend meetings of DOE, the Nuclear Waste Technical Review Board, the Nuclear Regulatory Commission, other federal and state agencies, and utility and industry groups. To reduce travel costs and avoid duplication, the counties share meeting reports and related materials with each other.

- Nye and Clark Counties will continue to observe the NRC's audits of quality assurance procedures at Yucca Mountain.

- Affected Counties, both individually and jointly, will conduct workshops on program issues, such as methods for determining site suitability, transportation, and NEPA compliance. In general, the goals of such workshops are to make subject experts available to local audiences, inform county program staff and interested citizens on relevant issues, and provide a setting for discussion of concerns and potential solutions.

Socioeconomic Monitoring and Impact Assessment

- Nevada is expected to remain one of the fastest growing states in the nation. To understand and plan for the impacts of developing a repository at Yucca Mountain, it is essential that the counties understand the dynamics of change in their communities and establish a suitable baseline database on social and economic conditions. Affected counties will continue to gather baseline data on socioeconomic conditions and, in some cases, continue developing impact assessment models

- Examples of specific activities include the following:
  - Mineral County will continue a four phase project to develop its socioeconomic baseline.
  - Clark County will continue refinements to the REMI econometric model, a nationally recognized model that evaluates effects of development on a local economy.
  - Nye County will continue to refine and run its economic/demographic model that has been designed to address its uniquely rural economic characteristics.
  - Nye County and the State of Nevada, with support from Clark County, will continue to refine and expand the capabilities of the Program Description Scenario Development System (PDSDS) to investigate project impacts. Additional model runs will be undertaken to calibrate the components and to further investigate the impacts of various alternative scenarios related to characterization of Yucca Mountain and its potential selection as a repository. Churchill, Esmeralda, Eureka, Inyo, Mineral and White Pine counties will have access to the model to investigate alternative scenarios.
  - Clark County will continue to integrate the PEDaL (demographics, economic development, and land use)and SING (government systems) software into Clark County operations.
  - Esmeralda, Churchill, Inyo, and Lander will continue developing their sociocultural baseline documents through collection of oral histories from key residents.
  - Clark and Lincoln Counties will continue "analogue" studies of socioeconomic impacts of the Three Mile Island accident, experiences at low-level waste disposal sites, and hazardous waste transportation accidents, to help frame planning studies, and to help better define monitoring variables.
  - Nye, Clark, and Esmeralda Counties and the State of Nevada will continue, through the work of a common contractor, the development of economic/demographic databases and impact assessment capability
  - Lincoln County, in cooperation with the University of Nevada, Reno, will apply the IMPLAN model framework to develop estimates of potential consequences of the repository system to Lincoln County.

- Geographic information systems have emerged as essential tools for managing large spatial databases. Most counties will complete installation of suitable GIS systems or assessments of GIS system needs. The counties will continue working together to coordinate their GIS systems, as appropriate.

- Several counties, including Clark, Churchill, Inyo, Lander, and White Pine Counties will conduct or finalize surveys of local residents' attitudes on Yucca Mountain and its potential impacts.

Geotechnical Analysis, Independent Scientific Investigations, Regulatory and Licensing Analysis, and On-Site Representation

- Nye County will further expand its independent scientific investigation program. In particular, the County will continue a four-hole drilling, data collection, and analysis program at the Yucca Mountain site and will also continue collecting and analyzing data from down-hole instrumentation in certain DOE boreholes.

- Nye, Clark, Inyo and Esmeralda Counties will continue their cooperative effort to characterize the regional hydrologic system and how it might be impacted by the Yucca Mountain Project.

- Nye and Clark Counties will continue to closely monitor technical and scientific activities at Yucca Mountain through use of on-site representatives.

- A major priority for most of the affected counties will be to better understand the full implications of DOE's Proposed Program Approach. By DOE's own admission, its new approach to site characterization entails significant risks. The counties believe it is essential that there be a full and well-informed debate about the implications of the Proposed Program Approach, especially with respect to the suitability of Yucca Mountain and licensing.

- Lincoln and Nye Counties will continue their cooperative effort to scope studies of potential off-site impacts eastern Nye County and western Lincoln County

Environmental and Radiological Impact Monitoring

- During FY96 DOE will undertake significant new environmental initiatives that will require substantial input from the affected Counties. Specifically, DOE will prepare an Environmental Impact Statement for the proposed multi-purpose canister system, and begin the scoping process for the Yucca Mountain EIS. The affected counties will participate fully in the scoping process for both the MPC and Yucca Mountain EISs, and provide detailed review and comment on the draft MPC, which is expected to be released in FY96. In preparation for these activities, the counties may sponsor workshops on relevant issue and participate in NEPA-related training.

- Churchill, Eureka, Inyo and Lander Counties will continue collecting baseline data on environmental conditions, especially along transportation corridors.

- Lander County will continue its investigation of impacts to county residents of past activities at the Nevada Test Site.

- Lincoln County will continue its studies of comparative impacts of weapons testing at the Nevada Test Site and potential risks from the repository system and of the potential for atmospheric migration of radionuclides and their relation to health and safety issues.

- Esmeralda, Lincoln and White Pine Counties will investigate the implications of cumulative risk from historical population exposure to radionuclides and the assessment of risk of transporting to, and disposing of, high-level waste and spent nuclear fuel at Yucca Mountain.

- White Pine County will continue characterization of environmental impacts resulting from transportation of radioactive wastes through White Pine County

Transportation

- Several counties will continue or begin evaluations of potential rail and highway access routes to Yucca Mountain.

- The affected counties will continue their involvement with DOE's Transportation External Coordination Working Group (TEC/WG) and the OCRWM Transportation Coordinating Group. The TEC/WG, in particular, has emerged as the primary vehicle for stakeholder involvement in development of DOE transportation policies. The counties believe it is essential that they participate in the TEC/WG activities, especially as they affect routing decision, financial assistance through NWPA section 180(c), public information, and cask development.

- The affected counties are very concerned about the implications on the transportation system of DOE's decision to deploy multi-purpose canisters. The counties will be following up in FY96 on an oversight action plan produced from a county-sponsored workshop to help understand the potential impacts of the MPC decision, and will take appropriate follow-up actions.

- Most counties will collect baseline data on hazardous and radioactive materials shipments through their jurisdictions and their transportation infrastructure.

- The affected counties will continue their cooperative efforts with the State of Nevada and the University of Nevada System on studies of transportation risk, infrastructure needs, and emergency response.

Emergency Management

- The counties will develop baseline data on their emergency response capabilities and evaluate potential training and equipment needs.

- The counties will establish contingencies that address various alternative futures associated with transporting radioactive waste to Yucca Mountain.

- Mineral County will continue its work creating a technical nexus between it geographic information operating system and SoftRisk, software designed for emergency management. Mineral will work to transfer this capability to the other counties.

Public Information, Involvement, and Education

- The affected counties believe that one of their key functions is to keep their residents informed of their oversight efforts and activities at Yucca Mountain. Moreover, it is important to provide opportunities for local residents to participate directly in developing county policies and priorities concerning the Yucca Mountain Project. To this end, the affected counties will provide enhanced public information activities in the following areas:
    - Presentations on the Yucca Mountain Project and related county activities to local organizations and schools.

- Public information offices and displays
- Newsletters. Inyo, Esmeralda, and White Pine cooperate in the production of their newsletters.
- Sponsorship of tours of Yucca Mountain site for local residents.

GENERAL PROGRAM

Mr. Myers. Has the Department developed a detailed schedule for the revision of the Standard Disposal Contracts with nuclear utilities? If so, please provide the schedule for the record.

Dr. Dreyfus. The schedule for the rulemaking process for contract modification is linked to that of the Environmental Impact Statement (EIS) for the fabrication and deployment of the Multi-Purpose Canister. The Notice of Proposed Rulemaking for modification of the Standard Contract will follow the issuance of the Draft EIS and the Final Rulemaking will follow the Record of Decision. The current schedule for these activities is shown in a table that I would like to insert for the record. The information follows:

Issue Draft EIS	11/95
Publish Notice of Proposed Rulemaking to Revise 10 CFR 961	12/95
Issue Final EIS	8/96
Issue Record of Decision	9/96
Publish the Final Rulemaking Revising 10 CFR 961	1/97
Conform Utility Contracts to Revised 10 CFR 961	11/97

Mr. Myers. Please describe your experience with program-wide videoconference services. Why are such services necessary?

Dr. Dreyfus. Since inception in June 1992, videoconference usage has been extensive and cost effective. With major decision centers in Washington, D.C., and Las Vegas, Nevada, there is a continuous need for integration among groups in both locations.

The advantages to videoconferencing are numerous and include: tangible savings in travel costs; improved personnel production with reduction of travel time; real time reaction capability to satisfy urgent requirements; greater involvement and participation by cognizant personnel and program stakeholders; and improved communications at all levels of management.

Use of the videoconference capability continues on an upward trend. The three-month average prior to March 1995 was 49 hours/month and has been as high as 62 hours/month this fiscal year. Total hours for March 1995 are currently scheduled at 77 hours. An average of 300 people per month at the program's Management and Operating contractor (M&O) in Vienna, Virginia, use the videoconference capability. The M&O expects to continue to use the videoconference capability as further enhancements are realized.

Last year, we estimated that videoconferencing supported a net savings to the program through December 1993 of $576,000. This saving does not reflect the intangible benefits of avoiding lost productivity in travel time nor the added efficiencies of cooperation engendered by frequent contact through videoconferencing.

Mr. Myers. Why is it necessary for the Department to spend $6-7 million annually from the Nuclear Waste Fund on educational activities? Are these essential activities? Are they required by the Nuclear Waste Policy Act?

Dr. Dreyfus. The $6-7 million cited represents an approximation of the total funds allocated to all Office of Civilian Radioactive Waste Management-wide (OCRWM) public information and education activities. The education component of that total, i.e., the amount allocated in FY 1995 in direct support of materials and activities intended to respond to requests from schools, teachers and students in grades up through high school is approximately $400,000.

The Nuclear Waste Policy Act of 1982 and amendments provides for the participation of States, Indian Tribes, and the public in the waste management program. The program's approach to public education with reference to this highly technical, complex issue affecting the long-term well-being of society and the environment, is in keeping with the Nuclear Waste Policy Act mandate by facilitating informed public participation, and to respond to the public's need for information.

In this regard, as a result of requests from the education community, OCRWM initiated a National Education Outreach Program in 1986, and as the education community continued to request teacher and student materials on nuclear waste management and disposal, OCRWM developed a resource curriculum which became available for distribution in 1992. Since then, 78,816 Teacher Guide units and 760,544 Student Reader units have been requested by educators in all 50 States and 48 foreign countries. Six hundred and sixty-three colleges and universities, 2,807 high schools, and 1,497 middle/junior high schools have requested this resource for use in their libraries. The OCRWM "Teachers Training Teachers" Program has conducted workshops in 17 States and trained 4,731 teachers of approximately 567,720 students. It must be stressed that OCRWM does not distribute curriculum material except in response to a specific request.

In addition, the program funds a graduate fellowship program whose purpose is to attract outstanding graduate students in engineering and the sciences to pursue careers in civilian radioactive waste management. FY 1995 funding allocated in support of this graduate fellowship program is also $400,000.

Finally, OCRWM supports Historically Black Colleges and Universities (HBCU) under Executive Order 12677. FY 1995 funding allocated to HBCU's is approximately $235,000.

Mr. Myers. What is the total amount owed to the Nuclear Waste Fund by DOE's defense programs?

Dr. Dreyfus. Based on a payment schedule developed in 1990, as of September 30, 1994, the Department's defense programs owed the Nuclear Waste Fund $664 million. This includes $437 million in principal and $227 million in interest. Updated estimates of specific defense-related costs are likely to increase the defense component.

Mr. Myers. What portion of the total [defense program] debt has been paid to date?

Dr. Dreyfus. As of September 30, 1994, defense programs had paid $233 million, or 26 percent of the $897 million in total costs (plus interest) which has been accrued.

Mr. Myers. What is the best estimate of the defense programs' portion of the total repository cost?

Dr. Dreyfus. The current estimate, based on the 1990 Total System Life Cycle Cost analysis, for defense waste disposal is $4.5 billion (in 1994 dollars, for a single-repository system). The changes in cost since that time indicate that the defense share will increase significantly in the next evaluation. The defense share of total costs will be approximately 25 percent.

YUCCA MOUNTAIN

Mr. Myers. The Subcommittee is following with great interest the Yucca Mountain "criticality" debate, provoked by a theory recently publicized by scientists at Los Alamos National Laboratory. According to the theory, decaying radioactive materials emplaced in the mountain could behave in such a manner as to trigger a nuclear chain reaction, resulting in a possible explosion and release of radioactivity into the environment. Other scientific reviews of the theory have concluded that it has "no technical merit." Has the Department evaluated the theory or otherwise participated in the debate? Do you have any personal views on the validity of the scientists' theory?

Dr. Dreyfus. The release of the Bowman/Venneri paper compromised an established scientific review process by reporting on a scientific paper before a formal and vigorous scientific and technical analysis had given it recognition.

Three Los Alamos technical review teams concluded that the authors do not describe a credible sequence of geologic events. These reviews conclude the probability that any necessary step-increases in reactivity to criticality, auto-catalysis, and explosive energy release will occur is small. The probability that all three will occur is vanishingly small. These technical reviews have concluded that even if the steps could occur, any energy release would be too small and slow to produce significant consequences either in the repository or on the surface.

The Department encourages the completion of an orderly scientific review of the Bowman/Venneri paper. The Civilian Radioactive Waste Management Program will evaluate any significance the theory may have to ongoing scientific studies at Yucca Mountain.

Mr. Myers. How, if at all, will the criticality theory affect site characterization activities at Yucca Mountain? Must the theory be effectively debunked before the Department would pronounce the site suitable for long-term storage of nuclear waste?

Dr. Dreyfus. The Department would pronounce Yucca Mountain as suitable only after thorough study, scientific review, and the assurance that the repository would not pose a threat to either the environment or the public. This will include any appropriate evaluation of the significance of credible criticality scenarios to potential repository performance and to ongoing scientific studies at Yucca Mountain. Should the Yucca Mountain site be found suitable as a repository by the Department and a license application be prepared and submitted to the Nuclear Regulatory Commission, the Commission will ultimately review the criticality issue as part of its review under 10 CFR Part 60.

Mr. Myers. Does the theory establish or support the case for developing particle accelerators which may be capable of transmuting radioactive wastes into non-fissionable materials prior to disposal? More generally, is it possible that future technological developments in radioactive waste management will render deep geologic burial of spent fuel unnecessary?

Dr. Dreyfus. While it is possible that such technological developments may foster an improved method for nuclear waste disposal, they are long-term, high-risk options. It is the national policy that the nuclear waste issue should not be left for future generations to solve. Rather, we should continue to evaluate the potential for the geologic disposal approach which has become the consensus strategy for the global community.

The use of accelerators to treat tens of thousands of tons of spent nuclear fuel would entail a national program of multiple fuel reprocessing plants and accelerator installations involving investments of approximately $80-90 billion.

Mr. Myers. The Department of Energy has been accused of suppressing the Yucca Mountain criticality debate, and Nevadans have called for an independent Federal investigation of the danger. Is such an investigation warranted?

Dr. Dreyfus. The Los Alamos National Laboratory draft criticality paper, upon which the question is based, was under internal review within the laboratory at the time the press articles describing the theory were released. As a result, it was and still is premature for the Office of Civilian Radioactive Waste Management to address the specific issues raised in the draft paper. The Office encourages the opinions of all interested parties and supports the scientific peer review process. National Laboratory scientists are reviewing the criticality issue and any impacts the theory may have on the scientific data being collected at Yucca Mountain. We do not believe that a Federal investigation would reveal any additional information on this issue. Criticality as a general consideration is, of course, being addressed in the characterization activity at Yucca Mountain and in the design of storage, transportation, and disposal technologies.

COMMENTS ON NUCLEAR WASTE LEGISLATION

Mr. Myers. Do you care to comment on nuclear waste legislative proposals pending in Congress? In particular, bills by Senator Johnston (S. 167) and Representative Upton (H.R. 1020) would have profoundly dramatic impacts on nuclear waste policy in the United States. Has the Department formulated positions on these bills?

Dr. Dreyfus. We support H.R. 1174, which provides that funds from the sale of the United States Enrichment Corporation are to be used for the Civilian Radioactive Waste Management Program. It is identical to the legislation the Administration submitted to Congress. With respect to proposals that would create an interim storage facility at Yucca Mountain, the Administration does not support any legislation currently before Congress. The Administration is considering, but has not yet developed positions on, other aspects of nuclear waste legislative proposals pending in Congress. When we have developed positions, we will communicate them to you.

YUCCA MOUNTAIN

Mr. Myers. Please describe the nature and status of consultations between the Department and Native Americans in Nevada in respect to the Yucca Mountain project. Has the Department evaluated legislative proposals to protect tribal sacred sites, such as the Native American Free Exercise of Religion and Cultural Protection Act, to determine potential impacts of such proposals on current and future activities at Yucca Mountain?

Dr. Dreyfus. The Yucca Mountain Site Characterization Project (YMP) has conducted an ongoing consultation/interaction process since 1987 with 16 Native American Tribes and organizations. In 1994, a seventeenth Tribe was added for consistency with similar consultation programs on Federal lands in the southern Nevada area. These Tribes and organizations were identified through an extensive ethnographic study. They consist of Western Shoshone, Southern Paiute, and Owens Valley Paiute/Shoshone people from four area States: Utah, Arizona, California, and Nevada. Since the beginning of the YMP's Native American consultation program, a formal government-to-government process and relationship has been followed.

The consultation program consists mainly of cultural resource protection efforts. Tribal Council-appointed representatives are brought to the site several times per year to view activities and provide recommendations regarding cultural resource protection. Project personnel, on a periodic basis, also travel to tribal locations to interact with Native American representatives and tribal councils to discuss their concerns.

With regard to YMP compliance with applicable laws and regulations, all cultural related legislation is being followed. These includes full compliance with the National Historic Preservation Act, Archaeological Resources Protection Act, American Indian Religious Freedom Act (AIRFA) including the 1994 amendments, Native American Graves Protection and Repatriation Act and the U.S. Department of Energy's American Indian Tribal Government Policy (DOE Order 1230.2). Also, much of the above compliance requirements are detailed in a formal Programmatic Agreement Between the DOE and the Advisory Council on Historic Preservation. The YMP has also prepared a Native American Policy Implementation Plan and an Environmental Field Activity Plan for Cultural Resources: Native American and Archaeological Components which detail the site-specific studies being conducted.

The YMP is indeed aware of S. 2269, the "Native American Cultural Protection and Free Exercise of Religion Act of 1994" and will continue to monitor its progress through the Federal process. Also, as part of potential revisions to AIRFA, various additional tenets were contemplated to be added regarding "free exercise of religion" issues. Such associated issues are currently addressed through the YMP ongoing Native American consultation program and will continue as regulations are introduced or modified. All sacred and religious sites in the Yucca Mountain area, as documented in ethnographic studies which included Native American involvement, are being protected, monitored, and visited periodically with tribal representatives.

The YMP is committed to addressing Native American issues and ensuring protection of significant cultural resource sites with respect to current and all future activities at Yucca Mountain.

Mr. Myers. To what extent, if any, is the development of advanced robotics necessary for the handling and disposal of spent nuclear fuel at a permanent geologic repository? Do such requirements, if they exist, affect the planning and characterization efforts at Yucca Mountain?

Dr. Dreyfus. Based upon our current conceptual design, the handling and disposal of spent nuclear fuel at a geologic repository can be accomplished with existing technology, including remote handling equipment, and does not require the development of advanced robotics. Preliminary studies have been conducted of robotic handling concepts for an interim storage facility as a means to reduce worker exposure. Similar concepts may be considered for the repository as the facility design matures and the potential benefits of specific operations can be more rigorously analyzed.

INTERIM STORAGE

Mr. Myers. Secretary O'Leary has testified that a federal centralized interim storage facility for commercial spent nuclear fuel could be ready in 24-36 months. Is this timetable realistic?

Dr. Dreyfus. If a site is designated by Congress and provisions for expedited environmental documentation and nuclear licensing similar to those contained in H.R. 1020 applied, a facility could potentially be available in a 36-month time frame, assuming no legal challenges to the process were successful. The actual construction phase of an interim storage facility would require 24-36 months, exclusive of any specialized transportation facilities.

Mr. Myers. How much money--exclusive of funds required for continuing site characterization activities--would the Department need in order to meet this timetable for the development of an interim facility?

Dr. Dreyfus. The added funding and schedule would depend upon the Congressional guidance received and the location of the site chosen for interim storage. A facility sited at Yucca Mountain, as contemplated in H.R. 1020, would involve the early construction of facilities that were planned for the repository and the construction of some additional facilities to support interim storage. Under such a scenario, the early commitment of some funds currently planned for repository surface facilities in the 2004-2010 time frame would also be necessary, assuming Yucca Mountain was found to be a suitable site.

The interim storage facility itself would require an additional $850 million in construction costs and about $250 million per year to add storage capacity and operate the facility at a receipt rate of 2000 metric tons of uranium (MTUs) per year. Rail access to the site at Yucca Mountain would cost about $1 billion depending on the route selected. Any benefit payments or payments equivalent to taxes for the facility's host State would also be additional costs.

Mr. Myers. Would the Department require legislative changes or additional authority to meet this timetable?

Dr. Dreyfus. Yes, under existing law and regulatory procedures, at least seven years would be required to bring interim storage to operations.

Mr. Myers. In its Notice of Inquiry on nuclear waste acceptance issues, the Department suggested the possibility of reimbursement to utilities for on-site storage costs in lieu of departmental assumption of title and possession of spent fuel beginning in 1998. In light of the Secretary's recent testimony supporting centralized interim storage, is it safe to assume that DOE is no longer considering on-site storage as a viable alternative? If so, please explain why the Department has embraced centralized interim storage as a preferable option.

Dr. Dreyfus. The Nuclear Regulatory Commission (NRC) has concluded that spent nuclear fuel generated in reactor can be stored safely without significant environmental impacts in reactor facility storage pools or independent spent fuel storage installations located at the reactor or away-from-reactor sites. The NRC further concluded that the spent nuclear fuel could be stored safely for at least 30 years beyond the licensed life for operation of the reactor. Six utilities in five States are already storing spent nuclear fuel in on-site dry cask storage facilities.

However, there is a strong case against leaving the fuel at 73 sites in 34 States for several decades. As power plants complete their licensed terms and shutdown, we will have dozens of nuclear facilities operated for the sole purpose of spent fuel storage. Sites would not be decontaminated and decommissioned until all of the spent fuel can be removed. In addition, although the fuel assemblies can be safely stored at the reactor sites, many of these sites are located in populated areas where the eventual removal of the fuel could become more difficult as the years pass.

Mr. Myers. If Congress were to require the Department to establish a centralized interim storage facility within the time frame suggested by the Secretary, what impacts would that requirement have on site characterization activities at Yucca Mountain?

Dr. Dreyfus. If the incremental funding for the interim storage facility were provided, site characterization activities could continue with minimal disruption. Establishment of centralized interim storage within the currently proposed funding profile would significantly delay site characterization at Yucca Mountain. Design and construction of an interim storage facility and a railroad concurrently over a three-year period would require most of the proposed funding profile during the construction phase.

Mr. Myers. Would DOE have sufficient resources to pursue both interim storage development and Yucca Mountain site characterization under current departmental budget projections for FY 96, 97 and 98?

Dr. Dreyfus. No. The Department would not have sufficient resources to fund both activities for FY 96, 97 and 98.

Mr. Myers. Would such a requirement interfere with the Department's plans to make a suitability determination for Yucca Mountain by 1998?

Dr. Dreyfus. If the incremental funding for the interim storage facility were provided, site characterization activities could continue with minimal disruption. Establishment of centralized interim storage within the currently proposed funding profile would significantly delay site characterization at Yucca Mountain. Design and construction of an interim storage facility and a railroad concurrently over a three-year period would require most of the proposed funding profile during the construction phase. The site characterization activity would have to be delayed by several years and the continuity of the ongoing work could probably be lost.

Mr. Myers. As you are aware, the Mescalero Apache Tribe of New Mexico recently voted to pursue development of an interim storage facility on tribal lands in cooperation with private utilities. Please describe the scope of involvement that the Department expects to have in future planning and development of this facility. Does the Department consider the Mescalero project to be a viable interim storage solution to the nation's spent fuel storage problem?

Dr. Dreyfus. The Mescalero Apache Tribe, in partnership with a number of electric utilities, is independently pursuing a spent fuel storage initiative without Department of Energy participation. The Tribe's proposal to construct an independent spent nuclear fuel storage facility is a private initiative on Native American Tribal land. The Department has no role in this matter and the Act does not preclude the building and operating of a spent nuclear fuel storage facility by a private party. Such a facility would be licensed under regulations promulgated by the Nuclear Regulatory Commission, an independent Federal agency responsible for overseeing civilian nuclear activities. The facility would have to meet Nuclear Regulatory Commission requirements before it could be licensed, and would be regulated throughout its operation to assure compliance with public and worker safety and health standards and environmental regulations. The Office of Civilian Radioactive Waste Management would work with developers of a private facility, as the initiative evolves, to ensure that such a facility is compatible with the Federal radioactive waste management system. The provisions of a facility of the type proposed at the Mescalero Apache Reservation would not address the long-term consolidation or disposal responsibility that the Federal Government has.

Mr. Myers. Please describe any lessons learned from the Department's experience with the recently expired Office of the Nuclear Waste Negotiator.

Dr. Dreyfus. The Department supported the efforts of the Nuclear Waste Negotiator to identify a voluntary host site for a monitored retrievable storage facility. Over the past four years of attempting to site this facility, we have learned, firsthand, the difficulties encountered in attempting to site a hazardous waste facility anywhere in the Nation. This confirms our belief that Congress will have to address the issue of interim storage of spent fuel. The program needs guidance, and probably new authority, to define its role in the near-term management of commercial spent fuel.

Mr. Myers. Now that the Office has expired, does the Office of Civilian Radioactive Waste Management foresee any role for itself in promoting future industry efforts to locate a Monitored Retrievable Storage site?

Dr. Dreyfus. While the Department could exercise a Federal siting process, consistent with section 144 of the Nuclear Waste Policy Act, as amended, the schedule linkages that tie the development of the Monitored Retrievable Storage (MRS) facility with the repository (Section 145(b)) undermine the usefulness of such an endeavor. Consequently, the Department does not plan to conduct any activities to site an MRS, at this time.

TRANSPORTATION

Mr. Myers. Anti-nuclear groups have attacked the federal nuclear waste program by alleging that the transportation of nuclear waste from plant sites to a federal facility represents a direct threat to public health and safety and the environment. In light of these charges, please characterize the government's safety record in regards to the transportation of nuclear waste.

Dr. Dreyfus. Over the last 25 years, more than 2,500 federally-regulated shipments of spent nuclear fuel have been transported over the Nation's highways, waterways, and railroads. During this time, an exemplary safety record has been established with no fatalities, injuries, or environmental damage caused by the radioactive nature of the cargo.

Mr. Myers. What steps does the Department intend to take to ensure that its positive safety record is maintained?

Dr. Dreyfus. The Department of Energy will develop a transportation system which has, as its primary purpose, the protection of the health and safety of those living near possible routes, as well as the preservation of the environment adjacent to those routes. U.S. Department of Transportation regulations will be followed for the transport of spent nuclear fuel and high-level radioactive waste.

The Department has also undertaken a major effort in developing a new generation of casks. The designs of these casks, like those of existing casks, are to be certified by the Nuclear Regulatory Commission for the packaging and safe transportation of radioactive material. In addition, the Department is currently preparing a routing guidance document which will further enhance Department of Transportation regulations by ensuring consistency in highway route selection, as well as providing guidance for rail shipments.

Pursuant to Section 180(c) of the Nuclear Waste Policy Act of 1982, as amended, the Department is to provide technical assistance and funds to States for the training of public safety officials of appropriate units of local government and Indian Tribes through whose jurisdictions spent nuclear fuel and high-level radioactive waste will be transported. On January 3, 1995, the Department published a Federal Register notice of inquiry to solicit public involvement in the development of policies and procedures to administer our responsibilities for this emergency response assistance under the Act. On March 14, 1995, the Department published a Federal Register notice extending the comment period by 45 days to May 18, 1995.

Mr. Myers. H.R. 1020, currently pending in the House of Representatives, includes a number of provisions regarding transportation of spent nuclear fuel. Among other things, the legislation: authorizes construction of rail facilities to transport spent fuel from plant sites to interim and permanent disposal sites; streamlines regulatory requirements for the development of transportation facilities; and promotes utilization of private industry for carriage of spent fuel. Has the Department developed a position on the transportation provisions of H.R. 1020?

Dr. Dreyfus. With the exception of H.R. 1174, the Administration has not developed a position on nuclear waste legislative proposals pending in the Congress. H.R. 1174 is the bill the Administration submitted to the Congress to provide continued funding for the program.

WASTE PACKAGES

Mr. Myers. Please describe generally the status of our efforts to design waste packages and develop multi-purpose canisters for spent nuclear fuel. Does much technical research and development remain in this area?

Dr. Dreyfus. The Multi-Purpose Canister (MPC) will be designed to meet the requirement for storage, transportation and eventually, geologic disposal of spent nuclear fuel using overpacks suitable for each function. Our target is to have MPCs available in the marketplace for storage and transportation in 1998.

We will award one or more design contracts for the MPC later this spring. In 1996, we will submit our request for design certification to NRC and conduct scale model testing. We expect to have approval for transportation from NRC in 1997 and for storage beginning in 1998.

In parallel, the Environmental Impact Statement is scheduled to be issued in 1996 supporting a Record of Decision for deployment of the technology.

The amount of technical research and development remaining before MPCs are available to utilities will be more clearly understood by the Department as vendor bids for the MPC subsystem contract are reviewed. We are going through that review at the present time.

MULTI-PURPOSE CANISTER SYSTEM

Mr. Fazio. DOE was expected to announce the award of the multi-purpose cask contract on March 15th. What is the status of that award?

Dr. Dreyfus. In response to requests from vendors, the period for preparation of proposals was extended by 10 weeks to November 7, 1994, to enable the bidders to provide more complete technical and cost information in their proposals. The program has stated that the MPC subsystem procurement is on an aggressive schedule but it is still anticipated that the first phase design award(s) will be made later this spring.

WASTE ACCEPTANCE, STORAGE AND TRANSPORTATION

Mr. Chapman. There are four nuclear power plants in Texas (Comanche Peak 1 & 2 and South Texas Project 1 & 2) which annually generate approximately 12.4 billion kilowatt-hours or 5% of the State's electricity. Ratepayers in the State of Texas have contributed over $90 million into the Nuclear Waste Fund to pay for a centralized storage facility for spent nuclear fuel. What are my State's electricity consumers getting for this significant expenditure?

Dr. Dreyfus. Fortunately, the nuclear utilities located within the State of Texas do not have near-term spent fuel storage concerns. Houston Light and Power, with two operating reactors, has sufficient storage capacity for the life of the plants; Texas Utilities, also with two operating reactors, has sufficient capacity until the year 2025. The $107 million that the ratepayers of the State of Texas have contributed to the Nuclear Waste Fund to date assure them of continued progress toward determining the suitability of the Yucca Mountain candidate site to host a geologic repository for the permanent disposal of spent nuclear fuel.

Specifically, we have moved forward in a number of Yucca Mountain site characterization areas including underground excavation activities, drilling and trenching studies, and collection of data in environmental programs. Last year, we finalized our site suitability evaluation process, taking into account the input we received from stakeholders and oversight bodies.

This year, within the Exploratory Studies Facility, we will continue tunneling and the construction of three testing alcoves. A conveyor system for the Tunnel Boring Machine to remove rock cuttings from within Yucca Mountain will be delivered. We will develop and issue an Environmental Impact Statement notice of intent for the proposed repository and conduct public scoping meetings.

Current plans include a target date for an evaluation about the technical suitability of the Yucca Mountain site in 1998, which will support a target date for a license application to the Nuclear Regulatory Commission in 2001, receipt of Commission construction authorization in 2004, and receipt of a Commission license for the initial emplacement of spent nuclear fuel in 2010.

In addition, we are also developing a Multi-Purpose Canister (MPC) that is intended to meet the system requirement for storage, transportation, and eventually, geologic disposal of spent nuclear fuel overpacks suitable for each function. Our target is to have MPCs available in the marketplace for storage and transportation in 1998.

Finally, the Administration has submitted a bill, H.R. 1174, that seeks to ensure an adequate funding profile for the program through FY 1998, at which time we hope to be able to make a recommendation as to the suitability of the site. It is imperative we get access to those dedicated funds, with Congressional oversight.

Mr. Chapman. As you know, the Federal government made a commitment to accept spent nuclear fuel from commercial nuclear power plants for storage and disposal beginning in 1998. It is clear that a permanent repository will not be available for quite some time. When Secretary O'Leary appeared before this Subcommittee last week, she indicated that a centralized interim storage facility could be completed within 24 to 36 months. In your view, is this an achievable goal? Would such a facility begin accepting spent nuclear fuel by the 1998 deadline?

Dr. Dreyfus. If a site is designated by Congress and provisions for expedited environmental documentation and nuclear licensing similar to those contained in H.R. 1020 applied, a facility could potentially be available in a 36-month time frame, assuming no legal challenges to the process were successful. The actual construction phase of an interim storage facility would require 24-36 months, exclusive of any specialized transportation facilities.

Mr. Chapman. Do you support the creation of a centralized interim storage facility at the Nevada Test Site -- given the ideal dry, desert environment and the fact that Yucca Mountain may be the permanent home for spent nuclear fuel, thus reducing future transportation of waste?

Dr. Dreyfus. With the exception of H.R. 1174, the Administration has not developed a position on nuclear waste legislative proposals pending in the Congress. H.R. 1174 is the bill the Administration submitted to the Congress to allow the Department to access the funds in the Treasury dedicated to this purpose.

Mr. Chapman. What are your specific plans with regard to a centralized interim storage facility?

Dr. Dreyfus. The Department is not involved in any interim storage facility siting activities. However, the Department has developed several conceptual designs for a monitored retrievable storage facility, which could form the basis of a detailed design for a license application. The Department is also developing the technical and institutional capability for acceptance and transportation of spent nuclear fuel from reactors to an interim storage facility should such a facility become available.

Mr. Chapman. As you indicated in your testimony, the Administration submitted legislation last month which authorizes mandatory funding for radioactive waste disposal activities in fiscal years 1996 through 1998. [FY 1996 - $432 million; FY 1997 - $540 million; and FY 1998 - $627 million.] The proposed offset is the sale of the U.S. Enrichment Corporation. My first concern with this proposal is that it requires an authorization. Second, it is my understanding that the authorizing Committee is considering using the offset proposed in your legislation, the U.S. Enrichment Corporation, to fund portions of the Contract With America. Can you comment on this situation?

Dr. Dreyfus. The Administration's position is to use the net proceeds from the privatization of the U.S. Enrichment Corporation for the civilian nuclear waste program. I understand that the House Commerce Committee voted on March 16, 1995, to apply the sale of the assets of the Corporation to offset direct spending of the Federal Government. The Secretary sent a letter to the Committee reiterating our need for those proceeds to go to offset the Nuclear Waste Fund. The Department continues to advocate funding of this program from the Nuclear Waste Fund collections outside of the Government-wide discretionary cap with an appropriate offset.

Mr. Chapman. What is the status of this legislation?

Dr. Dreyfus. The legislative proposal was transmitted to Congress on February 27, 1995, and introduced in the House of Representatives on March 8, 1995, by Mr. Upton as H.R. 1174, which has been referred to the Commerce Committee. The Department's position continues to be to pursue the legislation proposed by the Administration.

Mr. Chapman. It is also my understanding that the Administration's proposed legislation only provides funding offsets for three years. What happens at the end of this three year period?

Dr. Dreyfus. The restructured program and the associated funding profile through fiscal year 2000 were identified in the Civilian Radioactive Waste Management Program Plan which was issued in December 1994. The Administration has identified budgetary offsets at this time only for fiscal years 1996 through 1998, related to the sale of the United States Enrichment Corporation. By FY 1998, we hope to be able to make a determination on the site suitability.

At a future time, we plan to identify additional budgetary offsets that would compensate for the mandatory appropriations to the program over the remainder of the five-year period.

Mr. Chapman. Legislation has been introduced in the House by my colleagues, Representatives Upton and Townes, to authorize the Department to build an interim storage facility to begin accepting fuel by January 1, 1998. What is the Administration's position with regard to this bill?

Dr. Dreyfus. With the exception of H.R. 1174, the Administration has not developed a position on nuclear waste legislative proposals pending in the Congress. H.R. 1174 is the bill the Administration submitted to the Congress to allow the Department to access the funds in the Treasury dedicated to this purpose.

WASTE ACCEPTANCE, STORAGE AND TRANSPORTATION

Mr. Frelinghuysen. Recently DOE voluntarily accepted spent nuclear fuel from a number of research reactors in Europe on an interim basis. To my understanding, DOE had no legal obligation to accept this spent fuel, but did it nonetheless. Yet, DOE has stated it will only provide interim storage of nuclear spent fuel from commercial nuclear power plants if Congress enacts a law compelling it to do so. Why did DOE voluntarily provide interim storage for spent fuel from the European reactors, but not American reactors?

Dr. Dreyfus. The Department's acceptance of the return of U.S. origin spent fuel from research reactors for storage and disposal in the United States is based on furtherance of our Nation's long-standing nuclear weapons nonproliferation policy. The acceptance of this fuel will limit the availability of highly enriched uranium that could potentially be used to produce nuclear weapons. We believe that this action has sent a clear signal to other nations that we do not support international commerce in nuclear weapons materials.

This policy supports the Nation's nonproliferation goals by retrieving such spent nuclear fuel containing U.S. origin, highly enriched uranium and by encouraging nations hosting these reactors to convert them to low-enriched fuel. Specific characteristics and amounts of all of these additional wastes are not yet fully evaluated, although preliminary estimates are that there are about 20 metric tons of this waste which will be accepted into the United States waste management system. This represents less than 0.1 per cent of the total spent nuclear fuel generated to date from this country's commercial nuclear power plants or approximately the same amount generated annually from a single large nuclear power plant.

Mr. Frelinghuysen. DOE has stated that it is barred by law from accepting nuclear spent fuel from U.S. commercial nuclear power plants on an interim basis (Secretary O'Leary said this at a hearing in the Energy and Power Subcommittee last month.) I am aware the Nuclear Waste Policy Act forbids co-siting of a Monitored Retrievable Storage (MRS) facility and a repository in Nevada, but unaware of a provision that bars DOE from accepting nuclear spent fuel on an interim basis in another state. In fact, section 135 of the Nuclear Waste Policy Act specifically states that DOE shall provide 1,900 metric tons of capacity for the storage of spent fuel from civilian nuclear power reactors.

Why has DOE ignored this provision, and are you planning on providing capacity for 1,900 metric tons of spent fuel for commercial nuclear power plants?

Dr. Dreyfus. As you noted, the Nuclear Waste Policy Act does not prohibit the siting of an interim storage facility in a State other than the State of Nevada. However, to date, a host State for an interim storage facility has not been identified, and Section 145(b) of the Nuclear waste Policy Act prohibits the recommendation of such a site by the Secretary until the Secretary recommends a site for development of a repository to the President.

Section 135 of the Nuclear Waste Policy Act authorized 1,900 metric tons of Federal interim storage. To use this capacity, users must have met criteria established by the Nuclear Regulatory Commission, and entered into contracts with the Department. The Act required that such contracts be entered into not later than January 1, 1990. No utility ever made application for use of this capacity, and no contracts were entered into before the provision expired. Consequently, the Department has no current authority nor plans to provide such capacity.

Mr. Frelinghuysen. One of the advantages of the legislation introduced by Rep. Upton is its potential to avoid the need to expand on-site interim storage capacity at scores of individual sites across the country. I understand that H.R. 1020 relies on the schedule established by the Standard Contract for an interim storage facility. I question whether that schedule assures the greatest benefit to utility customers. As you know, the standard contract is based on the Oldest Fuel First (OFF) principle. Spent fuel would be accepted from the oldest plants first, regardless if they are running out of on-site storage capacity. If this schedule is used for an interim storage facility, we may fail to minimize the need to expand on-site storage capacity. Do you think that the acceptance schedule in H.R. 1020 should be modified to assure the greatest benefit to utility customers, meaning that the fewest number of utilities have to expand their on-site storage capacity?

Dr. Dreyfus. As you note, the Standard Contract allocates spent fuel acceptance capacity on the "Oldest Fuel First" basis. The resulting mismatch between capacity and need is addressed by another provision of the contract which allows the exchange of capacity allocations among purchasers. Under this provision, utilities requiring additional storage capacity may acquire waste acceptance capacity allocation from other utilities with surplus storage capacity, subject to approval by the Department. To facilitate the exchange of capacity allocation, the Department is developing a Delivery Commitment Schedule Information Network.

Mr. Frelinghuysen. Assuming H.R. 1020 were law, can you tell me how many sites will run out of storage capacity before repository operation that would not run out of capacity if the acceptance schedule was based on need rather than OFF? (assume the interim storage facility is operating in 1998).

Dr. Dreyfus. Based only on need rather than oldest fuel first, the rate in H.R. 1020 would be sufficient to cover all overflow. If the oldest fuel first rule were pursued, 15 sites would require dry storage between 1998 and 2010.

Mr. Frelinghuysen. Another key question related to H.R. 1020 is the acceptance rate. I understand the legislation directs DOE to accept 1,200 metric tons of spent fuel in 1998, 1,200 tons in 1999, 2,000 in 2000 and 2001, 2,700 tons in 2002, and 3,000 tons thereafter. Assuming H.R. 1020 were law, can DOE accept spent fuel at this rate?

Dr. Dreyfus. In order to accept spent nuclear fuel at this rate, the Department would need to fabricate, distribute, load, and transport about 130 multi-purpose canisters (MPCs) per year in 1998 and 1999 and over 200 MPCs per year in 2000 and beyond. This assumes that all of the spent nuclear fuel would be loaded in large MPCs. Actually, many smaller capacity casks would need to be used at facilities that cannot accommodate large MPCs.

It is unlikely that the Department could fabricate this many MPCs, and their corresponding transport casks and storage casks in the first few years of operations. The cask manufacturers, the utilities, and the Department will need to begin with limited operations in the early years and ramp-up in later years as they acquire experience and develop their capabilities. We would, of course, explore the feasibility of options to utilize currently-available hardware in the early years.

Mr. Frelinghuysen. Under H.R. 1020, DOE is directed to provide interim storage for nuclear spent fuel from commercial nuclear power plants beginning no later than January 31, 1998. Assuming H.R. 1020 becomes law this year, that gives DOE over two years to construct and license an interim storage facility. Can DOE meet this schedule? How long will it take DOE to construct an interim storage facility?

Dr. Dreyfus. If a site is designated by Congress and provisions for expedited environmental documentation and nuclear licensing similar to those contained in H.R. 1020 applied, a facility could potentially be available in a 36-month time frame, assuming no legal challenges to the process were successful. The actual construction phase of an interim storage facility would require 24-36 months, exclusive of any specialized transportation facilities.

YUCCA MOUNTAIN

Mr. Bevill. On several occasions, including the written statement of Dr. Cantlon today, the Nuclear Waste Technical Review Board has been critical of DOE's over-ambitious deadlines for reaching milestones at Yucca Mountain. Having visited the Yucca Mountain site, I am troubled by the slow progress of the drilling, and by the never ending process of obtaining all the necessary approvals to certify the efficacy of the site. Without ambitious deadlines, how do we encourage expediency, and guard against unnecessary delay?

Dr. Dreyfus. On a project of this complexity and magnitude, explicit targets for accomplishment must be established and progress must be measured against predetermined schedules and costs. I agree that the program we have laid out in the Program Plan is an ambitious one, but I also believe it is a reasonable one. In any investigation, new information may require changes in future targets. Indeed, unforeseen developments occur in any long-term venture. The first management effort, however, should be to set realistic targets and work to meet them.

INTERIM STORAGE

Mr. Bevill. Dr. Cantlon also notes in his statement that the long term implications of interim storage at reactor sites around the nation have not been addressed by DOE or the utilities? Aren't the potential hazardous implications of 75 high-level radioactive sites spread around our nation more dangerous than those posed at Yucca Mountain?

What is your current position on an approach to temporary storage?

Dr. Dreyfus. The Nuclear Regulatory Commission (NRC) has concluded that spent nuclear fuel generated in reactor can be stored safely without significant environmental impacts in reactor facility storage pools or independent spent fuel storage installations located at the reactor or away-from-reactor sites. The NRC further concluded that the spent nuclear fuel could be stored safely for at least 30 years beyond the licensed life for operation of the reactor. Six utilities in five States are already storing spent nuclear fuel in on-site dry cask storage facilities.

However, there is a strong case against leaving the fuel at 73 sites in 34 States for several decades. As power plants complete their licensed terms and shutdown, we will have dozens of nuclear facilities operated for the sole purpose of spent fuel storage. Sites would not be decontaminated and decommissioned until all of the spent fuel can be removed. In addition, although the fuel assemblies can be safely stored at the reactor sites, many of these sites are located in populated areas where the eventual removal of the fuel could become more difficult as the years pass.

Mr. Bevill. Would you care to share with the Committee your views on the bills recently introduced by Senator Johnston and Rep. Upton which propose using sites in Nevada for monitored retrievable storage facilities?

Dr. Dreyfus. With the exception of H.R. 1174, the Administration has not developed a position on nuclear waste legislative proposals pending in the Congress. H.R. 1174 is the bill the Administration submitted to the Congress to allow the Department to access the funds in the Treasury dedicated to this purpose.

The Department will maintain readiness to develop a Federal interim central storage facility if and when a site and the necessary resources are made available. We have already prepared the necessary implementation plans and a range of conceptual designs for such a facility. Because more detailed work would not be useful until a specific site has been selected, no development work is included in the current plan. Scheduling and budgeting for such a facility must await future policy determinations as well as resolution of the siting issue. The Department is maintaining a readiness capability to respond quickly if a decision is made to proceed with a Federal interim central storage facility.

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BIOGRAPHY

DANIEL A. DREYFUS

Dr. Daniel Dreyfus was nominated by President Clinton to serve as the Director, Office of Civilian Radioactive Waste Management (OCRWM), U.S. Department of Energy (DOE) on September 7, 1993, and was confirmed by the United States Senate on October 7, 1993.

In this position, Dr. Dreyfus is responsible for the development and execution of a program for the acceptance, transportation and storage and ultimate disposal of the spent fuel from the Nation's commercial nuclear powerplants. The program is also responsible for the ultimate disposal of highly radioactive waste resulting from the cleanup of the nuclear weapons complex.

Since February 1993, Dr. Dreyfus served as a Special Assistant to the Secretary of Energy. Prior to that, he was Vice President, Strategic Planning and Analysis, for the Gas Research Institute, a non-profit organization which plans and manages a comprehensive research and development program on behalf of the natural gas industry. He also served as President and CEO of Gas Technology Information, Inc., which is the operating agent for the International Center for Gas Technology Information, formed under the auspices of the International Energy Agency. He has held engineering and management positions in industry and in the executive and legislative branches of the federal government, including 14 years as professional staff member and Staff Director of the Senate Committee on Energy and Natural Resources.

After enlisted infantry service in Korea, Dr. Dreyfus was commissioned in the Corps of Engineers, U.S. Army Reserve. He is a member of the American Society of Civil Engineers, the Society of American Military Engineers, the Society of Professional Engineers, the American Political Science Association, and the American Society for Public Administration.

Dr. Dreyfus attended public schools in a number of states, and graduated from the Meguro High School in Tokyo, Japan. He received a Bachelor of Civil Engineering degree and a Master of Engineering Administration degree from George Washington University. He also received a Doctor of Philosophy degree from American University.

Dr. Dreyfus was born in Brooklyn, New York, March 5, 1931. He is married to the former Josephine Sime. They have five children and two grandchildren, and reside in McLean, Virginia.

October 1993

Statement of Daniel A. Dreyfus
Director
Office of Civilian Radioactive Waste Management
Department of Energy
FY 1996 Appropriations Hearings

I am Daniel A. Dreyfus, Director of the Department of Energy's Office of Civilian Radioactive Waste Management. I appreciate the opportunity to appear before you today to discuss our Fiscal Year 1996 budget request and the new program approach for the civilian radioactive waste management program, which provides the basis for the development of the budget request.

INTRODUCTION

The Nuclear Waste Policy Act of 1982 created the Office of Civilian Radioactive Waste Management within the Department of Energy to develop a system to accept, transport, store, and permanently dispose of spent nuclear fuel from commercial utilities. To pay for the system, the Act established a Nuclear Waste Fund financed by producers of nuclear-generated electricity. A presidential decision in 1985 directed that the system also provide for the disposal of radioactive wastes resulting from atomic energy defense activities. The Federal government is responsible for paying that portion of the program's costs associated with the disposal of defense-related waste.

I am pleased to report that we have made significant progress in the Civilian Radioactive Waste Management Program since I last appeared before you. Last year, we proposed a restructured program and a full funding profile that would permit us to meet the policy goals set by Congress in the Nuclear Waste Policy Act. I appreciated your support for that proposal in the FY 1995 appropriation. In FY 1995, the Congress provided $522.2 million for the program, which represented an increase of $142.2 million over the FY 1994 funding level of $380 million. We are moving forward with the initiatives that we proposed with that budget.

When we implemented the new program approach in late 1994, a rigorous cost and schedule performance measurement system was established to track progress against the metrics of the program approach. To date, the program has accomplished nearly 90 percent of its scheduled work within the budget for that work.

I would also like to take a moment to recognize that this program is frequently under fire for lack of progress. In the two years that Secretary of Energy Hazel O'Leary and I have worked under this Administration, we have made progress in a number of areas including progress on Yucca Mountain scientific investigations (including underground excavation activities, drilling and trenching studies, and collection of data in environmental programs) and multi-purpose canister development. Additionally, despite significantly increased project funding (almost all of which has been designated for Yucca Mountain site characterization activities), program management costs have remained relatively flat.

THE PROGRAM APPROACH

We have defined two major projects, or "business centers" within the program - the Yucca Mountain Site Characterization project and the Waste Acceptance, Storage and Transportation project. We have also created a management component for the program that provides integration, planning, and support to the Director and the projects. We have defined our goals, and we have laid a course to meet them.

The new approach is described in detail in the Civilian Radioactive Waste Management Program Plan which we issued in December 1994.

A major objective of the new approach is to begin to make definitive statements as early as possible about the suitability of the Yucca Mountain site to host a geologic repository:

- By 1998, we will complete evaluation of whether the Yucca Mountain site is technically suitable for development as a geologic repository;
- In 2000, if the site is found suitable, the Secretary of Energy will deliver a statutory Site Recommendation Report and Environmental Impact Statement to the President;
- In 2001, the Department of Energy will submit a license application to the Nuclear Regulatory Commission; and
- 2010 remains our target for emplacing waste into a geologic repository.

To confront the issue of waste acceptance, the new approach enables us to:

- provide to the marketplace, by 1998, a new generation of technology - the multi-purpose canister-based system - for at-reactor or off-site storage, transportation, and ultimately, disposal of spent nuclear fuel; and
- prepare for the orderly transportation of spent nuclear fuel from reactor sites to centralized storage.

We will support the Administration and Congress with information and expert advice concerning the pending legislation, and we have the managerial capability to implement any new mission we are given.

FISCAL YEAR 1996 BUDGET REQUEST

The overall FY 1996 budget request for the program is $630.0 million, which includes $431.6 million in mandatory funding and $198.4 million from the Defense Nuclear Waste Disposal appropriation. This represents an increase of $107.8 million over the FY 1995 appropriation of $522.2 million, which included $392.8 million from the Nuclear Waste Fund and $129.4 million from the Defense Nuclear Waste Disposal appropriation. In addition, $0.7 million is requested for the Civilian Radioactive Waste Research and Development (R&D) program, which is funded from the Energy Supply R&D appropriation.

THE NEW FUNDING APPROACH

To support the budget request, the Administration has proposed a new funding initiative. Addressing the funding mechanism for this program has been an exceedingly challenging task. This Administration has worked very hard to craft a proposal that provides sufficient resources to implement the new program approach and meets the necessary budgetary requirements.

As I stated earlier, as provided in the Nuclear Waste Policy Act, the civilian portion of the radioactive waste management program is funded by the beneficiaries of the program through the collection of a fee on the commercial generation of nuclear power into the Nuclear Waste Fund. In addition, the Federal Government provides funding to the program for the share of costs related to the disposal of defense-related high-level waste through the Defense Nuclear Waste Disposal appropriation.

Under the existing funding approach, annual appropriations to the program from the Nuclear Waste Fund are considered to be discretionary appropriations. Despite the fact that the ratepayers of nuclear utilities have been paying substantially more than the annual appropriated requests, the program must compete against other Departmental programs for a share of the Department's allocation within the Federal Government's discretionary appropriations cap. Effectively, the surplus of the revenues has been used each year to reduce the Federal budget deficit. With the increasing pressure to reduce discretionary spending, it is vitally important that we change the mechanism for funding the program. It will be difficult to continue to support the new program approach under the current budget caps. We must move forward on finding a long-term solution to our funding difficulties, which will grow more severe with time.

A legislative proposal was submitted to Congress on February 27, 1995 which authorizes mandatory funding for the program. Under this authorization, mandatory funding would be made available to the program in Fiscal Years 1996-1998 for radioactive waste disposal activities:

FY 1996	$432 million
FY 1997	$540 million
FY 1998	$627 million

In addition to these mandatory amounts, funding would continue to be requested from the Defense Nuclear Waste Disposal appropriation.

The Administration's funding proposal addresses two of the principal concerns with our funding proposal submitted last year. We have identified a viable long-term offset for budgetary scorekeeping purposes by additional Treasury receipts associated with the sale of the U.S. Enrichment Corporation. In addition, the proposal also includes a provision that allows the Appropriations Committee to provide limitations and/or direction to the funding of the program.

This approach is consistent with the intent of the Nuclear Waste Policy Act,which stipulated that the program was to be self-financed by the owners and generators of spent nuclear fuel and high-level waste. Implementation of this proposal would provide the necessary funding to maintain the milestones for the scientific and technical investigation of Yucca Mountain and to develop advanced technologies for near-term storage, in accordance with the new program approach.

YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT

The FY 1996 budget request for the Yucca Mountain Site Characterization Project is $472.1 million, compared to $375.3 million in FY 1995. This represents an increase of $96.8 million, nearly all of the total program increase we are requesting. The proposed funding supports construction of the 25-foot diameter Exploratory Studies Facility, which is the primary facility for underground investigations at the site; and operation of the 25-foot tunnel boring machine at a rate of three shifts per day, five days per week. It also supports ongoing surface-based testing activities, which include an active drilling program and scientific studies. These activities will result in substantial progress toward a determination of site suitability.

Overview of Yucca Mountain Site Characterization Activities

The scientific and technical investigations of the refocused Yucca Mountain Site Characterization project are intended to gather and analyze data to evaluate whether the site is suitable for development of the Nation's first geologic repository, and to support the preparation of the required regulatory documents. These activities are presented in terms of the following major product areas required to meet the near-term goals of the new program approach: (1) evaluating the technical suitability of the proposed site; (2) preparing an Environmental Impact Statement in accordance with the National Environmental Policy Act; and if the site is deemed suitable, (3) preparing and submitting to the Nuclear Regulatory Commission a license application to proceed with the construction of a geologic repository.

The previous approach to site characterization called for extensive testing, as described in the Site Characterization Plan for Yucca Mountain (issued in 1988), and assumed that most studies described in the Plan would need to be completed to support a decision on site suitability, National Environmental Policy Act activities, and resolution of licensing and repository design issues. This approach made little or no distinction between tests required to evaluate the suitability of the site or "predict" the long-term performance of the repository, and those required to confirm the adequacy of the predictions and the long-term safety of a repository.

Our current approach makes this distinction, which permits a logical phasing of tests and definition of key interim milestones leading to an earlier evaluation of whether Yucca Mountain appears to be a suitable site. It allows us to preserve the schedule for completing an Environmental Impact Statement, and for licensing, constructing, and operating the repository if the site is found suitable.

Current plans include a target date for an evaluation about the technical suitability of the Yucca Mountain site in 1998, which will support a target date for a license application to the Nuclear Regulatory Commission in 2001, receipt of Commission construction authorization in 2004, and receipt of a Commission license for the initial emplacement of spent nuclear fuel in 2010.

Key components of the scientific and technical investigations include surface and subsurface testing, technical data synthesis and analysis, and the analysis of environmental and socioeconomic impacts of a geologic repository. Surface-based studies have been conducted for many years. These investigations provided the basis for the decision to pursue more costly underground investigation, which is essential for evaluating the suitability of the site. Underground investigations require the construction of an underground Exploratory Studies Facility, which will provide access for direct observation of geologic conditions and for underground testing needed to evaluate the site. The underground investigations will be conducted in parallel with continuing surface-based testing to gather the required data to support the program's objectives. These investigations and the analytical and regulatory activities which they support represent the majority of the Yucca Mountain Site Characterization project's work in the coming years.

Before I discuss the details of our planned FY 1996 activities, I'd like to review our accomplishments in FY 1994 when we were still operating under funding constraints. I will then indicate how we restructured and began implementing the new program approach when we received the increased funding in FY 1995.

FY 1994 Accomplishments

Site Suitability

Development, in 1994, of a functional and defensible process for evaluating the suitability of the Yucca Mountain site was fundamental to the implementation of the program approach. The process was developed with stakeholder input. It was intended to accelerate key evaluations, establish near- and long-term milestones to measure sequential progress toward achieving the program's objectives, and involve stakeholders more directly in the program's decisions.

The resultant approach to our site suitability evaluation recognizes that there is a single technical program to support multiple end-users, and clearly separates the Department's site suitability evaluations from regulatory interactions with the Nuclear Regulatory Commission related to licensing. The approach allows program resources to be focused sequentially, and more effectively, on the respective topics. The evaluation approach will use appropriately conservative or bounding assumptions about site conditions and processes to evaluate the suitability of the site. These bounding assumptions may be reexamined in the license application, when additional site characterization data and more refined models are available.

During 1994, exploration and scientific investigations proceeded. We received, assembled, inspected, and moved the Tunnel Boring Machine into its 200-foot starter tunnel and initiated excavation of the Exploratory Studies Facility. A testing alcove was constructed off the starter tunnel, and air flow, hydrochemical, and construction effects tests were initiated. These tests are intended to gather data on the potential movement of radionuclides from the repository and on the effects of Exploratory Studies Facility and repository construction on the surrounding rock. The design work required to excavate the North Ramp of the Exploratory Studies Facility from the surface to the level of the proposed repository was also completed, based in part on information developed from the geologic drilling program.

The surface-based testing program advanced on a number of fronts. We completed drilling two deep boreholes to gather data on rock characteristics and hydrologic parameters in the rock layers above the water table beneath Yucca Mountain. Air was pumped into these boreholes to characterize airflow in fractures and rocks through which radionuclides could be transported.

We drilled two deep boreholes along the planned main tunnel of the Exploratory Studies Facility and completed construction of the drill pad for a third borehole. The data on the mechanical properties of the rock obtained from core samples from these boreholes, together with core from other boreholes, will enable us to complete the next phases of the Exploratory Studies Facility. In addition, the samples taken from these boreholes are being used to create a credible three-dimensional geologic model of the site that is required to determine the suitability of the site and the feasibility of constructing a geologic repository at this location.

We conducted laboratory tests to characterize the environmental responses to waste emplaced in the repository, and in particular, the heat that waste will emit. We drilled shallow boreholes to obtain data to evaluate faults and other subsurface geologic features at and near Yucca Mountain. We also completed numerous trenches and soil pits to evaluate seismic and volcanic hazards based on past geologic disturbances.

Performance assessment also continued. This is a methodology that applies data from field testing to computer models of natural and engineered processes to predict future performance of the repository. Performance assessments provide a basis to focus testing on the key uncertainties that affect site performance and will help to eliminate unnecessary tests.

National Environmental Policy Act

A substantial amount of the environmental data that will be needed for the Repository Environmental Impact Statement already exists through ongoing, environmental impact monitoring, data-collection programs. These programs gathered data in FY 1994 on the air quality and meteorology at the site, terrestrial ecosystems, cultural resources, regional water quality and quantity, radiological monitoring, and regional socioeconomics. FY 1994 activities also included planning and preparation for the first major National Environmental Policy Act milestone, initiating the scoping process for the repository Environmental Impact Statement in FY 1995.

Licensing

Licensing activities seek early resolution of technical issues to facilitate the timely review of a potential license application by the Nuclear Regulatory Commission. We submitted the first of a series of three topical reports on seismic hazard evaluation and design to the Commission and provided the Commission with additional information for their review of our topical report on extreme erosion.

To support licensing interactions the design of the repository and waste package proceeded. The repository design activities provide a basis for evaluating site performance and help ensure that construction of the Exploratory Studies Facility will not adversely affect the use of the site for a repository. The waste package design effort includes the concept evaluation, mechanical and thermal design work, and materials testing and evaluations. The goal is to develop a waste package with a mean lifetime well in excess of 1,000 years.

Payments to Units of Government

Section 116 (c)(1) of the Nuclear Waste Policy Act, as amended, authorizes funding for participation and oversight activities to be conducted by the State of Nevada and affected units of local government. For FY 1994, pursuant to the appropriation language for the Nuclear Waste Fund, $5.5 million was provided to the State of Nevada and $7.0 million was provided to affected units of local government for these activities. Funding of $3.7 million was provided to the University of Nevada System to conduct infrastructure studies and other research and development work.

In addition, Section 116 (c)(3) of the Nuclear Waste Policy Act, as amended, authorizes funding for Payments-Equal-to-Taxes (PETT) to affected units of government in amounts consistent with tax payments if the unit of government were permitted to tax site characterization and repository activities. In July, 1994, a settlement was reached between Nye County, Nevada and the Department for all arrearage of PETT liabilities from May 28, 1986 through June 30, 1992. The settlement establishes the PETT liability for this period to be $12.5 million. The settlement also establishes the PETT liability for tax years 1993 through 1999 to be $25.4 million. In FY 1994, we made the following PETT payments: $204,517 to the State of Nevada; $4.4 million to Nye County, NV; $81,648 to Clark County, NV; $2,028 to Esmeralda County, NV; $4,209 to Lincoln County, NV; and $14,330 to Inyo County, CA.

FY 1995 Activities

The FY 1995 funding level of $375.3 million that was appropriated for the Yucca Mountain Site Characterization project supported implementation of the refocused site characterization program included in the program approach.

Site Suitability

We finalized our site suitability evaluation process on December 2, 1994, taking into account the input we received from stakeholders and oversight bodies. We have begun implementation and are proceeding towards our first key milestone. This milestone includes five evaluations by the Program Director (i.e., higher-level findings) with respect to the surface characteristics of the site related to the availability of acceptable locations for surface facilities, the acceptability of hydrologic conditions for repository construction and operation, and the potential for extreme erosion to affect repository performance after closure.

We expect to continue surface-based testing at approximately the same level as FY 1994. Drilling activities will include drilling one deep unsaturated-zone borehole and two other boreholes to provide additional information on rock characteristics for potential repository design.

Elsewhere, to improve the cost-effectiveness of our program, we will emphasize testing and monitoring in existing boreholes. We are conducting major geophysical surveys to detect faults and fracture zones beneath Yucca Mountain and surrounding areas at depths of between one and 12.5 miles. These tests will help us complete a three-dimensional picture of the Yucca Mountain site and limit the need for additional drilling and underground exploration.

Within the Exploratory Studies Facility, we will continue tunneling and the construction of three testing alcoves. A conveyor system for the Tunnel Boring Machine to remove rock cuttings from within Yucca Mountain will be delivered. We will ensure that construction activities do not interfere with our primary mission to characterize the site. The tests conducted within the Exploratory Studies Facility and existing boreholes will help us characterize the pathways that radionuclides could take to the accessible environment as part of the development and validation of the waste management strategy.

Waste package design activities will focus on multi-purpose canister and other multi-barrier design concepts for spent nuclear fuel and defense-related high-level radioactive waste. As part of our approach, we will evaluate every investigation in our technical program to ensure that it is contributing to the needs of our suitability and licensing activities.

National Environmental Policy Act

The major activities planned for FY 1995 include the development and issuance of an Environmental Impact Statement Notice of Intent, conduct of public scoping meetings, and collection and categorization of all public comments received. The Notice of Intent, which is published in the *Federal Register*, will serve as the Department's public announcement that the Department intends to initiate development of an Environmental Impact Statement for a potential repository at Yucca Mountain, and will include a schedule for the public scoping meetings. Planning for development of a preliminary draft Repository Environmental Impact Statement Implementation Plan will be conducted in the latter part of FY 1995. This will include developing an annotated outline for the Draft Environmental Impact Statement as well as categorizing the comments received by the Department during the scoping process. Proposed responses to these comments will be developed.

Licensing
We will complete the next revision of our repository License Application Annotated Outline and issue it as a Department document for the first time. This document is the basis for our ongoing communication with Nuclear Regulatory Commission staff to ensure that the license application process meets Commission requirements. In addition, we will submit two Site Characterization Progress Reports to update the Commission on the status of our testing program as well as planned revisions. We will also submit our responses to the Commission staff's questions and comments from its review of our topical report on Extreme Erosion and will submit the second in our series of three topical reports on Seismic Hazards Assessment methodology.

Work will also continue on the Licensing Support System (LSS), a computer-based document storage and retrieval system which will be used by the Commission and interested parties in the licensing proceedings before the Commission. In January 1995, the LSS Working Group transmitted their final report documenting the conclusions and recommendation generated during a five-month review and evaluation of development options. The recommendations contained in this report will serve as the basis for future LSS development activities.

FY 1996 Activities

Site Suitability
During FY 1996, we will continue implementation of the site suitability evaluation. Data obtained through surface-based testing and testing conducted in the Exploratory Studies Facility during FY 1995 will be used as input for our evaluation of the compatibility of the rock at the site with construction and operation of the proposed repository. Technical reports on tectonics, geochemistry, and rock characteristics will be prepared and submitted to the National Academy of Sciences for peer review. We will continue collecting and analyzing data to support the preparation of the technical reports on natural resources, geohydrology, and operational radiological safety.

In FY 1996, the Tunnel Boring Machine will complete the North Ramp and begin excavation of the main drift within the Exploratory Studies Facility. The Topopah Spring formation, in which the repository would be located, will be penetrated for direct observation. Access will be provided for three additional scientific testing alcoves, bringing the total to six. The first drift into the Ghost Dance fault, a potentially significant geologic feature of the repository setting, will be completed. Observation of the fault at that depth will provide vital information on the structural and hydrologic attributes of the site, which will help determine, among other things, whether the fault may provide a preferential flowpath for water. Testing will be conducted in the alcoves to obtain thermal, hydrological, and geochemical data. These efforts will begin to resolve some major uncertainties about repository design and long-term behavior.

We will continue an active surface-based drilling program. Drilling activities will include drilling one borehole to the level of the water table to provide hydrological and geological information from both the saturated and unsaturated zones at the Yucca Mountain site, another borehole to provide additional information on rock characteristics, one deep geological borehole to aid our geophysical investigations, four boreholes to support design of the Exploratory Studies Facility, and three boreholes to provide information on previous volcanic activity at Yucca Mountain.

Design activities will focus on the physical interfaces between the waste package and multi-purpose canister, and other multi-barrier design concepts for spent nuclear fuel and defense-related high-level radioactive waste. Characterization of waste forms and materials testing will continue in limited scope to support the waste package design concept and will be used to refine predictive performance models required to evaluate site suitability.

National Environmental Policy Act
National Environmental Policy Act activities in FY 1996 will include completion of the Repository Environmental Impact Statement Implementation Plan. This plan will discuss, among other things, the proposed scope and content of the Environmental Impact Statement. It will respond to Environmental Impact Statement scoping comments and summarize issues raised during the scoping process. Ongoing environmental monitoring and preparation of baseline reports on air quality, radiological background, terrestrial ecosystems, archeological surveys, and water quality and quantity will continue. Environmental data collection required as part of the scoping process will be initiated. We will prepare preliminary drafts of various chapters for the Environmental Impact Statement and conduct a study of potential transportation routes within the State of Nevada.

Licensing
Our license application annotated outline process will be fully implemented early in FY 1996 to create a comprehensive list of information needs for licensing to support annual and long-range planning. We will submit our first revision of the Annotated Outline, which will include updates of all chapters using the Nuclear Regulatory Commission's final Format and Content Regulatory Guide for the license application and the guidance provided in their License Application Review Plan. All chapters will be updated to incorporate FY 1995 results from site characterization, design, and performance assessment activities and to re-evaluate information needs based on the preliminary results. In addition, the Commission's comments on previous License Application Annotated Outline revisions will be incorporated, as appropriate. This revision of the Annotated Outline will present a licensing strategy that

is consistent with our program approach. It will indicate how we plan to support a reasonable assurance finding by the Commission relative to compliance with their subsystem and total system performance objectives and other technical criteria.

To resolve technical issues with Commission staff, we will submit two topical reports. One will describe a methodology for demonstrating compliance with the Commission's requirements for groundwater travel time. The other will be the last of a series of three topical reports that describe the basis, methodology, and analysis for determining safe seismic designs. In addition, expert judgment studies on volcanism will be combined and integrated to provide information to evaluate the probability of volcanic disruption of the repository.

To ensure cost-effective implementation of our requirements to develop the Licensing Support System (LSS), in time to allow certification by the Commission and availability for use by Commission staff and other parties in reviewing our license application, an Analysis of Benefits and Costs will be conducted. This analysis will be used to determine whether the LSS should be developed in-house or purchased on the open market. In addition to surveying the market for existing software products, this evaluation will consider the use of the Records Data Management System which has been developed as part of the existing information resources management system. Our current plan calls for the procurement of an independent contractor to conduct the analysis, which is expected to be completed in FY 1996.

WASTE ACCEPTANCE, STORAGE AND TRANSPORTATION

The FY 1996 budget request for Waste Acceptance, Storage and Transportation is $61.6 million, compared to $57.0 million in FY 1995. This represents an increase of $4.6 million. This category includes three line items from the Congressional Budget submission: Monitored Retrievable Storage, Transportation System and Waste Acceptance. The request for Monitored Retrievable Storage, $27.4 million, is level with the FY 1995 budget appropriation. The request for Transportation activities is $26.6 million, compared to $23.6 million in FY 1995. The request for Waste Acceptance is $7.6 million, compared to $6 million in FY 1995.

The major activity during FY 1996 will be continued development of the multi-purpose canister-based system. Funding will also support development of high-capacity legal-weight truck casks, continuing contractual interactions with nuclear utilities, and institutional activities to support implementation of the transportation subsystem.

Before I present the details of our planned FY 1996 activities for Waste Acceptance, Storage and Transportation, I'd like to discuss our accomplishments for FY 1994 and highlights for FY 1995.

FY 1994 Accomplishments

Waste Acceptance
In May 1994, the Department issued a Notice of Inquiry to elicit the views of affected parties on (1) the Department's preliminary view that it does not have a statutory obligation to accept spent nuclear fuel in 1998 in the absence of an operational repository or a suitable storage facility constructed under the Nuclear Waste Policy Act of 1982, as amended; (2) the need for an interim, away-from-reactor storage facility prior to repository operations; and (3) options for offsetting, through the use of the Nuclear Waste Fund, a portion of the financial burden that may be incurred by utilities in continuing to store spent nuclear fuel at reactor sites beyond 1998. We received and reviewed more than 1,100 comments in response to the Notice of Inquiry.

Storage
In June 1994, we issued a request for proposal for the design of a multi-purpose canister-based system, in anticipation of one or more awards by the Spring of 1995. This system would help to standardize spent nuclear fuel storage at reactor sites, or at interim storage sites if they are developed. The multi-purpose canister will facilitate transportation and simplify waste disposal by providing an advanced technology that is compatible for storage, transportation and disposal.

Transportation
Our transportation activities are paced to meet a 2010 date for repository operation, while developing a readiness capability to transport waste earlier if a facility becomes available. Our planning assumptions are that most utilities would use multi-purpose canisters, and that transportation of the majority of spent fuel would be in multi-purpose canisters. For those utilities who chose not to or cannot use this technology, other arrangements will be made to include use of the high-capacity legal-weight truck casks that are being developed and that are presently in the Nuclear Regulatory Commission certification process as GA-4 (PWR) and GA-9 (BWR) applications.

In July and August, 1994, we submitted both of these truck cask designs to the Nuclear Regulatory Commission for certification.

FY 1995 Activities

Waste Acceptance
We prepared and issued a Safeguards and Security Plan in February 1995 and we will prepare and issue the Safeguards and Security Standard in April 1995. These documents outline plans to comply with anticipated safeguards requirements for the waste management system. The Spent Nuclear Fuel Verification Plan will be issued in July 1995. This Plan will form the basis for acceptance of both individual spent nuclear fuel assemblies and canistered spent nuclear fuel, and will include the material control and accounting plan. It will describe the process to achieve: (1) confirmation of the characteristics of the waste;

(2) confirmation of the identity of the spent nuclear fuel assemblies prior to their emplacement in either a transportation cask or a sealed canister; and (3) verification that the correct multi-purpose canisters are being delivered. The Plan will also record the results of any required tests (i.e., burnup measurements).

We completed a review of comments received in response to the Notice of Inquiry on waste acceptance issues, and will issue a report summarizing these responses in March 1995. We also will prepare and issue the Waste Acceptance Operations Plan, which will describe details of the operation of the waste acceptance function, in March 1995.

Storage
In FY 1995, our activities are concentrated on development of the multi-purpose canister subsystem. We expect to award one or more contracts for the design and certification of the multi-purpose canister subsystem in the Spring of 1995. On October 24, 1994, we issued a Notice of Intent to prepare an Environmental Impact Statement to support a decision on the fabrication and deployment of a multi-purpose canister-based system, and conducted three scoping meetings in November and December, 1994. We will use the input we received during the scoping period, which closed on January 6, 1995, to develop a Draft Environmental Impact Statement for the multi-purpose canister-based system.

Transportation
We are continuing to establish a capability to transport spent nuclear fuel in the multi-purpose canister. In May 1995, we plan to complete and submit to the Nuclear Regulatory Commission a Topical Report on partial spent fuel burn-up credit for the multi-purpose canister transportation cask and the high-capacity legal-weight truck casks. This will be followed by a later Topical Report based on additional spent fuel burnup credit derived from additional testing and data gathering. This additional testing includes experiments such as the Spent Fuel Safety Experiment scheduled for this year and the CERES test program being conducted by France and the United Kingdom.

Departmental route selection guidance for spent fuel shipments will be developed, and draft guidance will be shared with stakeholders by June 1995. We will also complete fabrication of a high-capacity legal-weight truck cask half-scale model by July 1995 and begin testing to verify the cask design analysis.

Of equal importance is our pursuit of the institutional arrangements to transport spent fuel. We will continue our work with state and local governments to establish acceptable procedures for routing, inspecting, and notification of the shipments. We have proceeded with activities to prepare for implementation of Section 180(c) of the Nuclear Waste Policy Act. This provision requires the Department to provide technical assistance and funds to States for training for public safety officials of appropriate units of local government and Indian tribes through whose jurisdiction spent nuclear fuel or high-level radioactive waste will be transported. Training programs are to cover procedures for safe, routine transportation of these materials as well as procedures for dealing with emergency response situations. We issued a Notice of Intent to prepare policy and procedures on implementation of Section 180(c) on January 3, 1995.

FY 1996 Activities

Waste Acceptance
We will publish a Notice of Proposed Rulemaking to begin the process to modify the *Standard Contract for Disposal of Spent Nuclear Fuel and/or High-Level Waste* (10 CFR 961) to allow acceptance of spent nuclear fuel in multi-purpose canisters, and incorporate other necessary changes, by December 1995. The rulemaking proceeding will be completed in FY 1997. We will complete development of spent fuel verification requirements and procedures, which will implement requirements of the Spent Fuel Verification Plan, by September 1996. To satisfy Nuclear Waste Policy Act requirements for a written agreement for the disposal of the Department's wastes, we will complete a Memorandum of Agreement with the Office of Environmental Restoration and Waste Management by September 1996.

Storage
We will continue to evaluate the vendor-developed multi-purpose canister designs and reports for licensability and monitor vendor licensing activities. Safety Analysis Report design(s) will be completed and submitted to the Commission in April 1996. We expect to receive Commission approval for multi-purpose canister Certification of Compliance for transportation use in June 1997 and for storage use by January 1998.

In parallel, we will issue a Draft Environmental Impact Statement on the fabrication and deployment of the multi-purpose canister-based system and hold public hearings. Public comments will be reviewed and incorporated into the Final Environmental Impact Statement in September 1996.

Transportation
A cask model will be fabricated and tested to support certification of the multi-purpose canister and its transportation cask under Nuclear Regulatory Commission requirements. We expect to receive Commission approval of our plans to ensure long-term criticality control for the multi-purpose canister transportation cask by August 1996.

We will complete half-scale model testing for the high-capacity legal-weight truck casks (GA-4) to support issuance of Certificates of Compliance by the Commission by December 1996.

We will continue to pursue the activities required to implement the provisions of Section 180(c) of the Nuclear Waste Policy Act. Based on the input received from the January 3, 1995, Notice of Intent to prepare policy and procedures, we will issue a Notice of Proposed Policy and Procedures on implementation of Section 180(c) by June 1995. After evaluating the comments received from stakeholders, we will issue a Final Notice of Policy and Procedures in January 1997. In June 1996, the Department will issue a Route Selection Guidance Document for spent fuel shipments.

PROGRAM SUPPORT

The FY 1996 budget request for Program Support is $96.3 million, compared to $90.0 million in FY 1995. This funding includes $14.5 million for quality assurance, $13.0 million for systems integration and regulatory compliance, and $68.8 million for program management activities. The program management component is about 11 percent of the total program budget for the year. With significantly increased funding for project work, we have held the program management costs relatively flat. The total program budget has increased by 66 percent from the FY 1994 appropriation to the FY 1996 request, while the program management component over the same period has increased by only 9 percent.

We have established a rigorous quality assurance program which is required and overseen by the Nuclear Regulatory Commission. This program commits us to perform safety-related work in accordance with the associated technical and administrative requirements. Establishment and execution of the quality assurance program is intended to protect the health and safety of the public and workers, and the environment. Compliance with the quality assurance program enables us to collect and maintain qualified, traceable data that can be used and considered valid by the Commission and other oversight bodies during program execution. Quality assurance program implementation is the responsibility of all personnel performing safety-related work. Independent audits and surveillances of this work ensure that the work is in compliance with appropriate nuclear standards.

Systems integration and regulatory compliance activities include National Environmental Policy Act compliance activities, coordination of interactions with the Nuclear Regulatory Commission to resolve licensing issues, providing guidance for complying with environmental, safety, and health requirements, technical integration, risk management, and configuration management.

Program management activities include Federal salaries, strategic planning, participation in international waste management activities, external relations and public outreach, program control administration, information management, and contracts management. For FY 1996, funding for salaries of 270 Federal Full-time Equivalents accounts for $22.5 million, which represents one third of the total program management budget.

The program support objectives of the new program approach include: (1) better integration of all program activities utilizing integrated program and project management systems; (2) more timely stakeholder participation in the program decision-making process; (3) clear lines of responsibility and authority for program participants; (4) revising management procedures, plans, and baselines to reflect the new program approach; and (5) the use of process improvement teams to identify management system problems and to implement corrective action.

FY 1994 Accomplishments

In FY 1994, we improved the integration of all program activities by reorganizing the Federal structure and clarifying organizational roles and responsibilities, and initiating the consolidation of major participants under the technical direction of the program's Management and Operating Contractor.

We assured more timely stakeholder participation in the program by: (1) holding two stakeholder briefings on the FY 1994 budget proposal; (2) hosting three public forums on spent fuel and high-level radioactive waste transportation issues; and (3) opening the bimonthly Director's Program Review meetings to the public. These meetings enable the Director to regularly review program progress against planned activities.

We updated program plans and baselines to reflect the new program approach by: (1) developing a comprehensive program plan to implement the program's Strategic Plan; (2) identifying changes required to the program baseline documents and initiating baseline revisions; (3) initiating the development of a Total Quality Management Plan; and (4) developing a legislative proposal to assure adequate program funding.

To identify management system problems and corrective actions, we initiated the Program Management Enhancement Task Force as well as the System Engineering Process Improvement Team.

FY 1995 Activities

In December 1994, we issued the Civilian Radioactive Waste Management Program Plan, which describes in detail our new program approach.

We will continue to improve the integration of program activities by completing the red and consolidation of direct program participants. We will also update the System Engineering Management Plan, the Program Management Systems Manual, the Information Resources Management Plan, the Baseline Management Plan, and develop a Test and Evaluation Management Plan.

We will revise program plans and baselines to reflect the new program approach by revising the program Total System Life Cycle Cost, as well as the program's strategy for complying with National Environmental Policy Act requirements. We will update the Program Cost and Schedule Baseline, the Civilian Radioactive Waste Management System Requirements Document, the System Requirements Document, the Program Work Breakdown Structure, and the program's Strategic Plan. We will also develop a Quality Assurance Transition Plan as well as a Public Participation Plan to provide stakeholders with meaningful opportunities to engage in the program decision-making process.

To identify management system problems and implement corrective actions, we completed the Program Management Enhancement Task Force Report and initiated the Change Management Improvement Working Group. We will also continue the System Engineering Process Improvement Team.

FY 1996 Activities

In FY 1996, we will continue to improve the integration of program activities by: (1) awarding a new integrated technical and management support contract which will consolidate existing contracts for support of the Federal staff at both business centers and the management center; (2) consolidating program participant quality assurance procedures; (3) updating contractual reporting requirements; and (4) implementing a single, integrated program planning and control system. In addition, the program will be managed as one integrated, strategic system in response to the Secretary's new initiative to strengthen the Department's Project Management System.

We will revise program documents to reflect the new program approach by completing the Fee Adequacy Report based on the prior year's Total System Life Cycle Cost.

CIVILIAN RADIOACTIVE WASTE RESEARCH AND DEVELOPMENT

The FY 1996 budget request for Civilian Radioactive Waste Research and Development is $0.7 million, which reflects no increase over the FY 1995 budget appropriation. The purpose of this program is to develop and demonstrate new technologies and conduct generic research to increase the use of dry spent fuel storage systems. The FY 1996 budget request of $0.7 million continues the monitoring and maintenance of casks at the Idaho National Engineering Laboratory containing spent nuclear fuel from demonstration projects, and activities at Pacific Northwest Laboratory to evaluate the behavior of spent fuel in long-term dry storage.

In FY 1996, prior-year funds will be used to continue work under cooperative agreements between: (1) the Department and the Electric Power Research Institute, and (2) the Department and the Sacramento Municipal Utility District to design, develop, and demonstrate a dry spent fuel transfer system and transportable storage casks. Congress appropriated approximately $4.0 million in both FY 1992 and FY 1993 for the Federal contribution to this project. The dry transfer system will permit the transfer of individual spent fuel assemblies from a conventional top loading transfer/transport cask to a multipurpose canister in a shielded overpack or accommodate spent nuclear fuel transfers between two conventional casks without the need for a pool. The schedule calls for the Department/Electric Power Research Institute transfer system design to be completed in August 1995 and a Topical Safety Analysis Report to be completed by year-end 1995. The Sacramento Municipal Utility District has contracted for two transportable storage casks and the design is under licensing review by the Nuclear Regulatory Commission.

CONCLUSION

We recognize that safe and timely disposal of the Nation's radioactive waste is one of our principal environmental challenges and we are committed to do our part to address this challenge.

We have established a managerial and technical capability and have developed and implemented a new program approach to carry out our legislative mandate. We believe that the new program approach is scientifically sound and achievable. The approach sets forth explicit tasks and we have associated the tasks with target dates and costs. We believe it will enable us to make measurable and significant progress towards our key objectives. In fact, by 1998, we should know enough to make an informed decision on whether to move forward with the proposed repository.

The increased funding level provided to the program in the FY 1995 appropriation has enabled us to initiate the new program approach we proposed last year. The funding profile that we are proposing for FY 1996 and beyond is consistent with the funding profile that was included in the FY 1995 budget. It will enable us to continue to make meaningful progress toward the goals set out in the Nuclear Waste Policy Act. It will also maintain a capability to respond to whatever new policy directions the Administration and Congress agree upon.

The next three years are critical for the program. I urge the Members of the Subcommittee to continue their strong support for the purposes of this program and to assist us in achieving the funding required to complete our mission by establishing a new mechanism for accessing the dedicated ratepayer monies for the program.

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February 8, 1995

The Speaker of the House
United States House of Representatives
Washington, D. C. 20515

Dear Mr. Speaker:

I am submitting the following as the last report to Congress by the Office of the Nuclear Waste Negotiator.

As the result of a legal cloud over our authority to continue operations, I terminated the mission of the Office on January 21, 1995. In closing the Office prior to completing its legislated mission, I leave with a sense of lost opportunity, although much was accomplished over my short fifteen month term. I hope that this report will encourage those who still believe in finding ways for the Federal government and the states to work together for solutions to challenging and controversial public policy issues.

When Congress created the Office of the Nuclear Waste Negotiator in 1987 as part of its amendments to the Nuclear Waste Policy Act of 1982, it recognized the possibility that the storage and disposal of the nation's civilian nuclear waste could be accomplished through cooperation. By giving the Office the authority to negotiate an agreement with a state or tribe, Congress was essentially saying to the states, "Reliance on Federal supremacy may not be the only way that we as a nation should deal with this issue." Perhaps the legacy of this Office should be that we demonstrated that the Federal government can work cooperatively and constructively with the states on this issue, if we are only willing to put forth the effort.

THE OFFICE I ASSUMED IN NOVEMBER 1993

Upon confirmation by the Senate in November of 1993, I took charge of an Office that had been in operation since September of 1990. My predecessor had remained in Office until June of 1993, but with the change of Administrations following the 1992 election, the Office was in essentially a suspended operational status from

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November of 1992 until I was confirmed a year later. This is important for four reasons.

First, for an Office whose entire term is four years and five months, a year hiatus is a very long time. Second, the lost year was an off-election year, which is when this particular Office, dealing with such a controversial issue, must make publicly recognizable progress if it is to make any progress at all. Third, one of the four tribes that was officially participating in the negotiated siting program when I took Office, the Mescalero Apache tribe in New Mexico, had become frustrated over that year with the lack of progress and funding and was looking to other opportunities. And fourth and perhaps most importantly, I found that with the passage of that year whatever hope the nuclear utility industry, the Department of Energy, and Congress had had for the mission of the Office of the Nuclear Waste Negotiator was gone. I received general support from these groups, but found their energies focussed more on either a legislated solution to temporary storage, abandonment of Federal away-from-reactor temporary storage altogether, or the development of a private interim storage facility on tribal lands.

With this as the backdrop I committed to making something happen. Congress was on the right track in creating this Office and it deserved the best chance it could get to be successful.

REINVENTING THE OFFICE

The siting program that I took over had relied on what I term a "trash for cash" approach. In return for hosting a waste storage facility, the state or tribe would be rewarded handsomely with payments and benefits that bore no necessary relationship to the facility. This approach presented me in November of 1993 with one frustrated tribe, and three tribes still willing to consider whatever program I came up with. There remained no viable non-tribal interests. I knew that to even enjoy the "possibility" of coming to an agreement and successfully siting a facility, perceptions had to change and the Office had to be essentially "reinvented".

I concluded that the reinvention needed to concentrate on two aspects of the mission, making sure that the potential hosts the Office worked with were inclusive of those that presented the best opportunities for siting, and developing a sufficiently defined presentation of facility and benefits to permit meaningful evaluation and consideration. Ultimate success would depend on whether the siting opportunity was considered by the localities where siting a temporary storage facility made practical sense, and whether the opportunity they considered was real and worthy of consideration.

NEW APPROACH TO POTENTIAL HOSTS

With respect to the potential hosts, I committed to continuing to work with the four tribes that were already in the program, while seeking to approach potential hosting opportunities that did not involve siting a facility on a "green field", green field being a site that had not previously experienced any environmental degradation. This resulted in efforts being directed at closed military bases and facilities and laboratories owned by the Department of Energy. I did not have the time to conduct a "volunteer" program. I do not think the voluntary approach to siting works for this type of an issue. I think you need to tell potential hosts that they are likely to be qualified, and ask for their consideration.

SEEKING TO CHANGE PERCEPTIONS

As to the presentation of facility and benefits, I knew that much work would need to be done, and I found that it wasn't until the fall of 1994 that I had a presentation with which I was comfortable.

In my confirmation I asserted my conclusion and firm belief that the transportation and storage of nuclear waste was safe. We have the technology and experience. This was a radical departure from my predecessor, who proposed to provide grant funding to potential hosts to allow them to determine for themselves whether transportation and storage was safe. I believed that as Negotiator, it was essential to take a clear stand in order to be able to interact with elected officials and the public with any credibility. Had I not been able to take that stand, I would not have taken the job.

Given that the handling and storage of spent fuel was safe, and recognizing that the perception of a storage facility as nothing more than a "dump" (to coin a popular media term), I wanted to know if it was possible for something to be done with the spent fuel as opposed to just storing it. For the next several months following my confirmation, I conducted an extensive evaluation of whether spent fuel had value. I held a roundtable discussion on February 10, 1994, with a dozen scientists who were working on projects utilizing spent fuel. The report that was issued after that roundtable documented that spent fuel has potential value that will almost certainly be realized at some time in the future. The projects that were perhaps the closest to being practical at this time were those involving food irradiation and ozone production, and of course this concept of value did not even consider the potential value associated with reprocessing.

My efforts to pursue this question were widely misinterpreted. This can best be summed up by my Deputy, Robert Mussler, being told by a utility executive upon hearing of this idea, "Don't tell me spent fuel isn't waste!" Rather than trying to somehow convert a temporary storage facility into an instant research park, I was trying to get others to think about spent fuel differently, by having the Office think about it differently. To my knowledge no one had ever proffered the idea that spent fuel might have value besides reprocessing, and I believe my willingness to address this possibility in a direct, public manner, changed the debate. I also believe that technology will advance and the day will come when the value of spent fuel is recognized.

DEVELOPING A CONCISE PRESENTATION

Having dealt in a fairly short period of time with the perception and approach to spent fuel, and its storage and management, I set out to put together a concise presentation that could be reasonably and fairly considered, evaluated, and pursued or rejected by elected officials.

This took more time than I had expected, but in the end it was worth it. Out of a facilitated workshop on March 23, 1994, came the idea that the Department of Energy's multi-purpose canister (MPC) program may present an economic development opportunity that could be coupled with the temporary storage facility. We worked to develop the idea, and coordinated that development with the Director of the Office of Civilian Radioactive Waste Management at the Department of Energy. The MPC program involves manufacturing and assembling Nuclear Regulatory Commission certified containers for the handling and dry storage of spent fuel. The program projects a need for 10,000 canisters, and is a 3 to 5 billion dollar project. By September 1994 we had focussed our efforts on refining the presentation of the economic development opportunities that the MPC program presented to a potential host. The overriding consideration in the development of this idea was that whatever part of the MPC program might go to a state, it must make sense. We were not proposing the creation of a heavy foundry industry in a state that did not already have one. In such states the focus would rather be on assembly and inspection.

Although the presentation contained a number of other elements to describe the facility and other associated benefits, I felt that the MPC element was the most important in conveying the message that this was a genuine opportunity worthy of consideration. As I noted earlier, this presentation was completed to my satisfaction in the fall of 1994.

CHANGING THE APPROACH TO FINANCIAL ASSISTANCE

Another aspect of the program that needed attention when I took Office was the way that financial assistance was provided to potential hosts to support their participation in the negotiated siting program. My predecessor has relied on grants administered by the Department of Energy, and at about the time I was confirmed, a major element of that grant program had been deleted by Congress. I decided that relying on the Department of Energy to provide financial assistance to potential hosts was not the best way to operate and concluded that what we really should do is to instead directly enter into cooperative agreements with those potential hosts. The cooperative agreement is a funding mechanism that anticipates interest and participation by both parties in the activities funded. This fit much better with the way I intended to interact with potential hosts. Since our budget did not provide for the funding of cooperative agreements, I approached the Director of the Office of Civilian Waste Management for help. The Director and I worked out the transfer of an initial $250,000 to the Office to fund cooperative agreements that I might enter into. This ended up working out very well, giving us the flexibility and responsiveness we needed to establish and maintain credible relationships.

With the cooperative agreement funding mechanism in place, and the development of the presentation that described the temporary storage facility and the associated economic development opportunities that the MPC program could bring with it, I had what I needed to begin direct discussions with those potential hosts where a temporary storage facility made practical sense. It was a presentation that used an overhead projector, and it was a very effective communication vehicle. Unfortunately, with the closing of the Office I was not able to give this presentation to all of those who I felt needed to hear it.

In this first part of the report I have discussed how I changed, or reinvented, the negotiated siting program. I am convinced that this was a viable program, open to consideration by many governors and state officials. In the second part of the report I will discuss the chronology of interactions with potential hosts. I will then conclude with a brief discussion of the circumstances of the closure of the Office.

PROGRESS WITH POTENTIAL HOSTS

As discussed earlier, I took over the Office with one frustrated tribe and three tribes that were at different points in the process of their consideration of hosting a storage facility. By the beginning of 1994, the Mescalero Apache tribe had redirected their efforts to working with a group of utilities to develop a private storage facility on their reservation. Adding to this tribe's concerns with the Federal negotiated siting program was the passage of a law that I discussed earlier that took away from the tribe the opportunity to receive 2.8 million dollars in grant monies to pursue the Federal project. My support for the deletion of this grant authority, based on concerns about the lack of specificity on how the funds were to be used, did not help my relations with the tribe. My Office had essentially no contact with the tribe following their commitment to the private project. The private project was reject by the tribal membership in a referendum held last month.

The Tonkawa tribe in Oklahoma was in the process of concluding their initial consideration of the project when I took Office. Following one meeting with the tribal leadership, and prior to any opportunity to have any broader discussions with the tribal membership, the tribe rejected the project in a referendum on August 12, 1994.

The Fort McDermitt Paiute-Shoshone tribe in Oregon and Nevada decided in 1994 to defer active consideration of the project. Prior to this decision I was able to meet with the tribal leadership and visit the reservation. I was also able to meet with county officials in Humbolt County, Nevada, and Malheur County, Oregon, as well as participate in a community meeting in the town of McDermitt. Since the tribe's reservation straddled the state line, even though the site would be on the Oregon side of the reservation, the tribe was very active in including the two counties and the community in meetings, tours, and citizen advisory groups. The tribe's deferral in 1994 was due to the gubernatorial contest underway in Oregon. I should note that the tribe had their first meeting with a representative of the newly elected governor in January of 1995. Based on the meeting, the tribe is optimistic that the new governor will be receptive to discussing the merits of the project based on sound science, notwithstanding the closure of the Office.

The Skull Valley Goshute tribe in Utah continued to pursue the project aggressively right up to the closure of the Office. We completed a cooperative agreement with the tribe for $48,000 to support the development of a framework for negotiating an agreement for the tribe to host a storage facility on their reservation. The development of the framework was also to give each party an indication of whether we seemed to have the ability to work constructively together. Over the last half of 1994, in negotiating the cooperative agreement and the framework for future negotiations, I found that we indeed had the ability to communicate and work effectively together. I was optimistic about the prospects of entering into formal negotiations with the tribe.

At the time we began discussions to develop the cooperative agreement with the tribe, we notified the state and county that cooperative agreements were also to be made available to them if they wished to participate at this time. Within days of completing the cooperative agreement with the tribe, we signed cooperative agreements with Tooele County for $18,000, and the University of Utah for $25,000. The University was interested in conducting an analysis of the economic and transportation impacts of a storage facility on the reservation, and the County intended to use their money to have the University do the same type of analysis on a county basis.

In early December 1994, the Office sponsored a trip to the Idaho National Engineering Laboratory for all members of the tribe interested in seeing and learning about the storage of spent fuel. Approximately one fifth of the tribal membership participated in the trip, and the response was very positive.

On the week the Office closed, I received a completed framework for negotiations signed by the tribal chairman. Had the Office not closed I would have signed the framework and the tribe and the Office would have then been in formal negotiations. I cannot say that this would have necessarily led to a completed agreement to be sent to Congress, but I do know that to have even reached this stage was unprecedented.

The work on the County analysis was stopped, but the University report, based on costs already incurred, is to be completed sometime later this month. I have directed that a copy of the report be sent to the Office of Civilian Radioactive Waste Management at the Department of Energy, with hopes that they may be able to use it in their future work.

In addition to working with the tribes that I inherited, I initiated contacts with the office in the Pentagon that manages base closures to determine if closed bases offered any siting opportunities. After providing them a list of criteria, we received a listing of possible base closures that might have the size and access needs of a storage facility. We pursued each of those leads and at the time of Office closure we were continuing to have discussions with the base closure committee for the Wurtsworth Air Force Base in Michigan. In the final analysis, much of the prior land use planning for the closed bases precluded consideration of the storage facility.

In pursuing the challenges of seeking to work directly with governors or their representatives, I employed what I would term quiet diplomacy. This is the way that I believe that Congress intended for the Negotiator to function and it is indeed the only way that meaningful communications outside of the public posturing imperatives can occur. It was very effective. A free flowing dialogue was, and I believe would have continued to be possible with many state executives. I can report that since the presentation discussed above was put together, I had established good lines of communications in three states, and I was in the process of working to expand that number. It is specifically this aspect of the program and my efforts in this area that leave me with the greatest sense of lost opportunity.

CONCLUSION

I have concluded that the management, storage, and disposal of nuclear waste presents one of the greatest challenges to the principles of federalism. I cannot say for certain that my efforts would have resulted in a state willingly accepting spent fuel storage, but I do know that the opportunity for meaningful discussions existed. What I can say for certain is that discussions I would have had with many governors would have resulted in a greater awareness and understanding of the controversial, emotional, and politically charged issues that surround spent fuel. This is a problem that is not going to go away. Unfortunately, this Office may have been the last chance to develop mutually agreeable solutions. With its demise we as a Nation are left with an unhealthy reliance on Federal supremacy at a time when mutual solutions to issues such as this are more important than ever.

TERMINATION OF MISSION-CLOSURE

The termination of the mission of the Office is occasioned by a legal cloud over our authority to continue operations. Congress had appropriated adequate funding for the full fiscal year, but there was a question raised in early January about the basis of authority for such continued operations. As part of my aggressive pursuit of the opportunity to complete my mission, I obtained the opinion of outside legal counsel on the question of the authority to continue operations of the Office until the end of this fiscal year. That outside legal opinion concluded that such authority existed.

This opinion was reviewed and concurred with by the General Counsel of the Office of Management and Budget. I am advised that the same conclusion was reached by the General Counsel of the General Services Administration. However, I was told that the Legal Counsel for the Department of Justice reached a contrary conclusion. Given the sensitive nature of the work underway, and the recognized urgency to make real progress this year, the resolution of these conflicting views would create significant obstacles and take time that I did not have. It thereby essentially negated any chance of my succeeding with the mission of the Office. As I said at the time I was confirmed by the Senate, I have no interest in keeping the Office open if there is little or no likelihood of success.

During the short period of orderly shutdown and closure of the Office I secured an audit of our financial records by an independent outside accounting firm. The report of that audit concluded that at closure all financial records and accounting practices were in order.

Over the past fifteen months I have had the good fortune of a dedicated, hard working, and highly competent staff. I'd like to take this opportunity to express my appreciation for the efforts of Michael Campilongo, Gary Catron, Maureen Conley, Henry Ebert, Martha Fitzsimmons, Brad Hoaglun, Tom Lien, Bob Liimatainen, Bob Mussler, Angie Neitzel, and Jennifer Stone.

I am very appreciative of having been asked by the President to serve in this Administration. It was an honor and a privilege to have had the opportunity to accept this challenging assignment.

Sincerely,

Richard H. Stallings
Negotiator

cc: ✓ Hon. John T. Meyers
Chairman, Energy and Water Development
Subcommittee, U. S. House of Representatives
Committee on Appropriations

Hon. Tom Bevill
Ranking Minority Member, Energy and Water
Development Subcommittee, U. S. House of Representatives
Committee on Appropriations

Hon Thomas Bliley
Chairman, U. S. House of Representatives
Committee on Commerce

Hon. John Dingell
Ranking Minority Member, U. S. House of Representatives
Committee on Commerce

Hon. Don Young
Chairman, U. S. House of Representatives
Committee on Resources

Hon. George Miller
Ranking Minority Member, U. S. House of Representatives
Committee on Resources

THURSDAY, MARCH 16, 1995.

NUCLEAR WASTE TECHNICAL REVIEW BOARD

WITNESSES

JOHN E. CANTLON, CHAIRMAN
GARRY D. BREWER, BOARD MEMBER
DENNIS CONDIE, DEPUTY EXECUTIVE DIRECTOR OF BOARD

Mr. MYERS. The committee will come to order and resume our hearing this morning. Please pardon us; we had to go vote. Sorry we had to interrupt the hearings, but we now have the Nuclear Waste Technical Review Board.

Dr. Cantlon, we are pleased to have you and your associates here to testify. Your prepared statement will be placed in the record. You may proceed as you care.

Dr. CANTLON. Chairman Myers, members of the subcommittee, thank you for this opportunity to appear before you this morning. I am, as indicated, John Cantlon, Chairman of the Nuclear Waste Technical Review Board. My colleague is Dr. Garry Brewer. He is the dean of the School of Natural Resources and Environment at the University of Michigan.

I am a former vice president for research and dean of the graduate school at Michigan State University. We are pleased to be here today and to present the Board's appropriation request for fiscal year 1996.

I will begin this morning with a summary of our appropriation request followed by a brief review of the Board's charter and recent accomplishments as well as future activities.

Mr. Chairman, I ask that my full statement and attachments referred to be included in the record of this hearing.

Mr. MYERS. Your entire statement will be in the record.

Dr. CANTLON. The Board's appropriation request for fiscal year 1996 is $2.97 million in new budget authority. When combined with an anticipated unobligated fiscal year balance from 1995 of $523,000, the Board's aggregate funding required for fiscal year 1996 is $3.493 million.

Mr. Chairman, as you know, the Nuclear Waste Technical Review Board is the agency charged by Congress with providing an ongoing, independent, and unbiased review of all technical and scientific aspects of the DOE's civilian radioactive waste management program, including its effort to characterize the site at Yucca Mountain, Nevada, to determine its potential suitability for constructing a permanent repository for spent nuclear fuel and high level waste.

This Board serves a unique function that is not being accomplished by any other existing agency, either within or outside the Federal government. The Board, whose members are appointed by the President from a list of eminent scientists and engineers that have been nominated by the National Academy of Sciences, has succeeded in applying its expertise and judgment to the evaluation of this DOE program in the manner envisioned by Congress.

Another critical role that the Board plays is that of catalyst for the technical community. By publicly asking detailed technical questions and making recommendations, the Board is able to affect the DOE's technical and scientific program as it unfolds. The Board helps the DOE to continuously evaluate its own activities, to examine the fundamentals of the program, and to set priorities iteratively and thus sharpen the program's technical objectives.

As we have conducted our extensive technical and scientific review, we have also found in several instances that we needed to acquire a general understanding of the implications of some critical nontechnical factors that have important implications for the scientific and technical integrity of the program. These nontechnical factors, such as management and institutional issues, are discussed in the full statement.

Mr. Chairman, since Dr. Dreyfus took over as OCRWM's director a year ago, significant progress has been achieved in addressing a number of the program's management problems. These problems had increased over the years as a result of unrealistic schedule deadlines and overly optimistic budget assumptions that did not materialize as actual budget allocations.

The Civilian Radioactive Waste Management Program Plan that was released by DOE this past December represents an attempt by the DOE to refocus its resources on important activities such as those required for determining the site's suitability.

It is the Board's preliminary view that the plan offers both opportunities and risks. Among the opportunities is the chance to streamline the program and to establish clear near-term goals against which real progress can be measured. Among the risks is the increase in technical and scientific uncertainties that will result because less data and analysis than previously planned will be available in 1998 when DOE plans to make a site suitability determination.

If the site is found suitable and approved in 2001 when DOE begins the process of applying to NRC for a license to construct the repository, the data also will be less under this new program.

The Board discusses in detail its views on the DOE's new program plan in its 11th report which will be released in two weeks, and my full statement highlights the recommendation the Board will be making in that report.

Very briefly, however, I would like to mention one of the Board's key recommendations in that report. Currently the DOE is refocusing its site characterization task. As part of that effort, some activities will be completed, some will be deferred, and some will be deleted. The Board believes that DOE needs to continue to focus on developing its waste isolation strategy to provide an improved technical basis for making these important decisions.

Once that strategy has been articulated, it will help identify and quantify the roles of the various repository features and barriers that will provide for the waste isolation.

It also will justify the data needs, the schedules and the funding required to support the technical activities. This strategy should be based on defense in-depth philosophy that has long been a fundamental aspect of the DOE's repository planning.

I would like to say that with respect to the Yucca Mountain site, the Board has found no technical reason, from surface-based data collected so far, that would indicate that the site is unsuitable. However, underground exploration and some testing at Yucca Mountain will be necessary before a site suitability decision can be made or an application submitted to the NRC for construction authorization. The Board believes that immediate opportunities exist to further improve some aspects of the DOE's new program.

In addition to continuing to develop its waste isolation strategy, the DOE should increase emphasis on underground excavation and testing at the site and allocate program funds in such a way as to increase the R&D in the development of a long-lived waste package.

Mr. Chairman, if I may, I would like to take this opportunity to mention briefly an issue that is not addressed in the Board's upcoming report but which the Board has been examining in recent months in terms of its implication for the DOE's repository development program. The issue is spent fuel storage, one that, as you well know, has received a lot of attention recently.

In its October 1993 Special Report, the Board observed that providing for the safe storage of spent fuel does not appear to present any substantial technical problem. However, decisions about spent fuel storage may well have financial and technical implications for the DOE's repository development program. In the next few months, the Board will be completing a brief report on issues related to spent fuel storage. I would like to communicate our findings to the subcommittee and the Secretary of Energy at that time.

Mr. Chairman, the Board's activities and recommendations have consistently rested on the scientific and technical credibility that results from the Board's independence, its objectivity, and the scientific competence of its members and staff. All of the Board members look forward to continuing our ongoing review of this very important program.

Thank you, Mr. Chairman, for this opportunity to appear. Dr. Brewer and I would be pleased to respond to subcommittee questions.

Mr. MYERS. Well, thank you, Dr. Cantlon.

Dr. Brewer, do you have any comments at this point?

Dr. BREWER. No, sir. Questions.

Mr. MYERS. Dr. Cantlon, throughout the executive branch there seem to be many vacancies, unfilled spots. The fact that you are five board members short, as I recall——

Dr. CANTLON. Yes.

Mr. MYERS [continuing]. Has that impaired or impeded in any way your ability to do your job?

Dr. CANTLON. Yes, it does. It would be advantageous to the Board to have a full membership. We have tried to compensate for the deficiency.

Recall that we are in a sense one member deep in these very special disciplines, and therefore when we lose a hydrologist, which is one of the critical features in whether that repository will work effectively or not, this means that we have to fill that in.

What we have been doing is to pull in ex-board members as consultants, and so we have been able to draw on their expertise. But when we are in a formal public meeting, they can't really serve as Board members. So, yes, it is a problem.

Mr. MYERS. You were here when we had a discussion with Dr. Dreyfus about the activities at Yucca Mountain. It seems to me this committee has been concerned about how we just haven't really been giving enough attention to Yucca Mountain.

Do you have people there all the time?

Dr. CANTLON. No, we do not.

Mr. MYERS. How frequently do you have someone there on the site?

Dr. CANTLON. We probably, I would say, on average have somebody there almost every month in one form or another, but there may be periods as much as two months in which no one is there. The Board meets in the Las Vegas area, and we get out to the site about once a year.

Mr. MYERS. Is there anything more important for the DOE to be doing right now than to find a place for storage of our nuclear wastes from our utilities? Are we wrong—

Dr. CANTLON. Storage as opposed to disposal?

Mr. MYERS. Well, I think you have to relate both of them, disposal and storage.

Dr. CANTLON. I think the Board's position is that the challenge for nuclear waste worldwide is to confirm the feasibility of disposal. If you can confirm the feasibility of disposal, then the matter of storage is clearly an interim issue because disposal is an option. At the moment, we have not confirmed the feasibility of the disposal option, which is priority number one internationally.

Mr. MYERS. But other countries, France particularly, have dry storage outside. They have conquered it. They reprocess and take the hot stuff out of there and——

Dr. CANTLON. Yes.

Mr. MYERS [continuing]. Reduce the radiation impact. Is there any question about whether we can do it—that we have the technology and know how to do it?

Dr. CANTLON. Storage is technically simple.

Mr. MYERS. It is just a matter of making up our minds we are going to do it?

Dr. CANTLON. We would have had it if we would have kept on our original track. The trouble is we changed track.

Mr. MYERS. Who listens to you? You report to several——

Dr. CANTLON. We report to you, the Congress. We report to the Secretary of Energy.

All of our public meetings are open, public meetings in which we get into the nitty-gritty detail on these technical issues. Attending those meetings are people from the technical community, from NRC, DOE, various universities, and the State of Nevada.

So we have in our open public sessions, an extremely candid open discussion of these controversial questions and technical issues. So among the people that listen to us is a very broad spectrum of the technical community, which is what I think Congress had in mind when they created us.

Mr. MYERS. Congress did create the Board. They listen to you, but do they hear you? As an example, how frequently do you meet with the Secretary of Energy?

Dr. CANTLON. We met with her three months ago and had a very candid exchange.

Dr. BREWER. Sir, we are meeting routinely with Dan Dreyfus and his people at that level. The meetings with the Secretary directly are not frequent, the issues are really detailed, technical issues that require consideration by people who have the detailed technical background and knowledge.

Mr. MYERS. Well, the Los Alamos study about the criticality of the site, you are familiar, I am sure, with that, about the danger as they see it of a possibility of a disaster happening once you start storing high level waste there at Yucca Mountain. Have you any views on this?

Dr. CANTLON. Well, obviously it is too recent an issue for our Board to have formally taken up. We have it on our agenda for our April board meeting in Las Vegas, so we will be looking at it.

Mr. MYERS. Will you share your observations with this committee at the time you make some evaluation of that report?

Dr. CANTLON. Absolutely.

Mr. MYERS. I think we are all concerned about that, but again, other people in the world are doing this on a routine basis and have not had this problem. But, see, we have no scientists on our board, the committee here. You are scientists and you have scientists available to you, so we have to rely on people like you who come in and tell us what we should be doing.

We get told all the time what we should be doing by our constituency, and we have to listen. We do listen. But on this highly technical matter, we depend on people like you here. As it was created, the Board is independent. You are not depending on somebody for your job. Hopefully you all have the experience to provide the kind of resources we need. So we depend very heavily on your recommendations. At this time we have some other questions.

Mr. Knollenberg, are you ready?

Mr. KNOLLENBERG. Yes, I am.

Mr. MYERS. Another Michigander here.

Mr. KNOLLENBERG. Thank you, Mr. Chairman.

Gentlemen, thank you. My questions will be quite brief. I know that your budget for fiscal year 1996 is $3.49 million. I understand that $1.5 million is for personnel. Is that correct?

Dr. CANTLON. We have got a numbers man. We are a part-time board, so we rely on our permanent staff for some of these critical numbers.

Mr. CONDIE. Actually the estimate is $2.45 million, it is about 70 percent of our budget for personnel related costs.

Dr. CANTLON. Seventy percent of our budget is personnel, $2.45 million for the total.

Mr. KNOLLENBERG. Then there is an unobligated balance of $523 million that is wrapped into the total of $3.4 million?

Dr. CANTLON. That is correct.

Mr. KNOLLENBERG. Can you give me something like a five-year chart, showing a trend of what is happening budget-wise with the entire agency?

Mr. MYERS. Please identify the witness as you come up, too, please.

Mr. CONDIE. Dennis Condie——

Dr. CANTLON [continuing]. Who is our associate executive director, handles the budget and personnel relations.

Mr. CONDIE. Since our inception, our creation back in 1989, we have approached but never reached full board and full staffing. Our actual appropriation requests have ranged anywhere from a new BA of $3.294 in fiscal year 1992 to the current $2.97 million. The carryover from prior years has become less and less as we staff up.

[The information follows:]

The following is the funding history for the Nuclear Waste Technical Review Board since its activation:

[In thousands of dollars]

	Fiscal year—							
	1989	1990	1991	1992	1993	1994	1995	1996
Resources:								
Appropriations	3,000	2,000	0	3,294	2,060	2,160	2,664	2,970
Carryover from prior years	988	3,510	3,673	55	1,234	963	709	523
Total	3,988	5,510	3,673	3,3349	3,294	3,123	3,373	3,493
Actual costs	478	1,862	2,434	2,418	2,657	2,650	3,373	3,493

Mr. KNOLLENBERG. Would it be fair to say that overappropriations have been the history here in the last several years?

Mr. CONDIE. Well, the reason why we have carryover is that we always budget anticipating a full board and full staff, and we have never reached that. We are approaching that.

Mr. KNOLLENBERG. That is an anticipation of your duties extending to include additional responsibilities—Yucca Mountains, for example.

Mr. CONDIE. No, not necessarily. Actually, as I said, we have never reached a full board of 11. We have gone from the original eight members to ten, and we are now down to six. So we have always had significant carryover.

Dr. BREWER. Mr. Knollenberg, the problem with the carryover is related to our problems in getting Board members appointed. You have to have the money in place pending the appointments. If the people show up they have to be paid, and we have had great difficulty in finding approval for the five remaining members. As stated earlier, it causes problems because we have one member responsible for one part of this very, very complex program. So we are handling it with consultants, we are handling it with very qualified staff.

The carryover, particularly in this period when Yucca Mountain is becoming so critical, the carryover itself is critical because we are trying desperately to get a fully staffed board so we can do the job as you and the Congress envisioned. That is an important point to make.

Mr. KNOLLENBERG. Did you want to make a comment?

Dr. CANTLON. I would just say that some of the other boards that Congress has created have solved part of the problem by having in the language of appointment that their duty continues until their replacement is found. And if we had that change in language, our problem would be resolved. In other words, we would have a person who has been brought up to speed, we keep them there until their replacement shows up instead of having an attenuated board because the appointment ends. There is a way to resolve the issue.

Mr. KNOLLENBERG. In regard to Yucca Mountain, I know that that is not officially determined yet. There are still some holes to fill, some investigatory work that has to be done, but assuming it does reach fruition in 1998—is that the year?

Dr. CANTLON. That is DOE's hoped for date of making its own internal decision, the question of whether or not it will actually be licensed. There is a three-stage license. One is a license to construct it which they will apply for in 2001. And then there will be an additional license to actually accept waste which will happen eight years later, seven, eight years later.

Mr. KNOLLENBERG. Once it is in place, do you have any idea about the anticipated costs of maintaining it?

Dr. CANTLON. Nothing that our board has looked at would give us any knowledge to respond.

Mr. KNOLLENBERG. What about the cost for transportation of nuclear waste to the site? Is that anything that has been looked at or——

Dr. CANTLON. Again, we have looked at the technical set of issues, the big costs. We of course have been shipping nuclear materials for a long time in this country and worldwide.

Mr. KNOLLENBERG. This is nothing new. There won't be any added burden because we have the repository for the nuclear waste. That traffic or transportation problem won't be anything in excess of what we have now; is that what you are saying?

Dr. CANTLON. That is right.

Mr. KNOLLENBERG. Okay. I think that probably concludes my questions. I did have a question about liability which I will submit for the record and I ask unanimous consent, Mr. Chairman, to do that, and that concerns a number of areas and I don't want to obligate too much time here so that my colleagues can have their opportunity as well.

So with that, thank you, panel. Mr. Chairman, thank you.

Mr. MYERS. Thank you. Mr. Frelinghuysen.

Mr. FRELINGHUYSEN. Thank you, Mr. Chairman.

On page 6, you have a comment. Among the Board's recommendations for completing DOE-scheduled activities were, A, establishing priorities, intermediate goals based on a thorough understanding of overall waste management; B, allocate more money to scientific studies and less to overhead and infrastructure.

Apropos of the Chairman's questions earlier, when you make these recommendations, what happens? Does anyone ever act on them or do they sort of go off into oblivion?

Dr. CANTLON. No, DOE formally responds in writing to all of our recommendations in our formal reports so we get their response in writing and, in fact, we publish their written responses in our follow-up report.

Mr. FRELINGHUYSEN. So whenever——

Dr. CANTLON. There is a formal exchange.

Mr. FRELINGHUYSEN. So there is a formal exchange.

Are you satisfied with their responses, more importantly, than their putting something on paper for you to review?

Dr. CANTLON. In the main, I would say yes. We have had I think good response on a number of recommendations that we have made. There are certain of our recommendations which they believe differently on and they so state. In others, they accept the recommendation but observe that they are not funded adequately to continue in that direction, so there are many ways in which one could respond. We are satisfied that they have responded to the extent they could respond, but if they are not funded to do it, that is another thing.

But in the area of indirect costs, in my career as a research administrator in a university one of the things that you learn very early is if you want to do a budget cut, you had better take it in the administration before you start handling it down the way. In other words, indirect costs can be cut like all costs.

Mr. FRELINGHUYSEN. Have you found the Department of Energy to subscribe to that notion?

Dr. CANTLON. I think Dr. Dreyfus has, in fact, succeeded in some reductions of indirect costs. It is important, I think, for you to understand that when you compare indirect costs for a project being done by the government, you cannot compare that with the costs of a private sector doing exactly the same thing. And you know the reasons probably better than we do.

Mr. FRELINGHUYSEN. I certainly do. So in terms of allocating more money to scientific studies and less to overhead and infrastructure, has there indeed been a shift towards realizing that goal?

Dr. CANTLON Yes. Dr. Dreyfus is moving in that direction. We have had some extremely candid personal conversations with him. He explains the problems he encounters and the means by which he has begun to address some of those and has, in fact, succeeded in part, but, you know, that is a very difficult problem.

Mr. FRELINGHUYSEN. Thank you. Thank you, Mr. Chairman.

Mr. MYERS. Thank you. Mr. Bunn.

Mr. BUNN. Thank you.

You had mentioned earlier that we would have been able to find a permanent solution by now if we hadn't been sidetracked. Did I understand you correctly?

Dr. CANTLON Well, the U.S.—unlike the French—has changed directions. Originally, we had intended to reprocess. When you reprocess, by the very fact you reprocess, you have to build a place to put the waste from reprocessing, so interim storage would have been an integral part of that decision. Since we changed directions halfway through the program, we ended up without an interim storage facility.

Mr. BUNN. Well, now, whether it is permanent, interim, or onsite, does the on-site storage pose a substantially higher risk to the environment than interim storage and shipping?

Dr. CANTLON The studies that have looked at that indicate that the risk differences are very modest. There are differences, but they are modest differences. There are certainly innate technical risks. Recall this is a technical board now that is addressing you. As a technical board, by the way, that is a very different thing than perception of risk. But you must be very clear in distinguishing between types of risk when you have 100 different sites with different people perceiving risks, that is a different thing from the literal technical risk.

Mr. BUNN. Okay. We have got to deal with the political impacts.

Dr. CANTLON Indeed you do.

Mr. BUNN. But as far as scientifically, it poses in your opinion no greater risk to have the——

Dr. CANTLON The differences are very small.

Mr. BUNN. Thank you very much.

Mr. MYERS. Dr. Brewer, do you have something you wanted to add?

Dr. BREWER. I was just basically reinforcing that if you have 75 to 100 sites, you have much more opportunity to observe the risk as opposed to having one site. The other thing to keep in mind is that with one site you have reduced numbers of people involved in providing the oversight and the security for it. The technical parts of it are different. The political parts are very different.

Mr. BUNN. And I assume it is not the role of your board but what are the economic impacts of it? You don't deal with that at all.

Dr. CANTLON It is not in our charter. As I understand it, there have been some studies so I think we could look up those studies and provide them to you.

[The information follows:]

In the late 1980's, the DOE, the state of Tennessee, and a congressionally chartered Monitored Retrievable Storage Review Commission each conducted a major study to compare the total costs of managing spent fuel with or without a centralized storage facility. Although their estimates varied somewhat, they each reached two identical conclusions: First, when costs were discounted, a waste management system that included a centralized storage facility (either large or small) was always more expensive than the current approach of at-reactor storage. That finding usually held as well when costs were not discounted. In fact, the only exception to the general result was the case of a very large centralized facility accepting spent fuel in 2000 when a repository was not available until 2023. Second, while the current approach of decentralized storage is less expensive, its advantage was relatively small, around five per cent of total system costs.

"A 1994 DOE assessment, the System Architecture Study, rejects those two conclusions. For both the undiscounted and discounted calculations, it estimates that a waste management system that includes a centralized storage facility (either large or small) is always less expensive than the current approach of decentralized storage, almost regardless of when a repository begins operation. Moreover, the difference could be as much as $10 billion—or as much as 25 per cent of total system costs—if a repository opening date is delayed until the year 2030.

Mr. BUNN. Or I can ask the right group. Thank you.

Mr. MYERS. Thank you, Jim.

Part of the responsibility that you have, of course, is to make recommendations about improvements to examine the various programs, one of which, of course, involves what we are going to do with the spent fuel. Has there been any consideration?

You mentioned that we did a change in the process a few years ago. We were going to have the monitored retrievable storage facility and we took that out, thinking we couldn't spend the money.

We didn't have the money to spend on that in-between step. Maybe we made a mistake, collectively, both DOE and Congress. Nevertheless, we made that mistake.

What consideration or recommendations have you made about an interim storage facility?

Dr. CANTLON. We are, in fact, in the process of generating that report. We expect it to be done by the end of April, and we will provide it to you, looking at the storage issue largely from its technical coupling to disposal.

As I mentioned earlier, until one confirms the feasibility of disposal, all storage becomes in perpetuity. And the only way to address that challenge, which gives you your political problem, is to continue with alacrity demonstrating the feasibility if it can be demonstrated for a particular site.

Now, it is premature to say that that can be demonstrated at Yucca Mountain, but I have no doubt in my mind that the feasibility of deep geologic disposal can be demonstrated, and all of the nuclear countries in the world have essentially made that same technical judgment.

Mr. MYERS. Well, it is obvious we are not going to be able to meet the commitment we made to the utilities and to the American people that we would provide storage for them by the year 1998. We know we can't make that.

So we have to have some way to afford an opportunity for these utilities who now have dry storage, which means that there is a risk there. And we had testimony earlier that by the year 2000 we are going to have 16 who have dry storage. It would be very difficult to have any type of storage, interim or otherwise, by the year 2000, because this is 1995 and we aren't even starting—well, we are thinking about it. I think we really have to get on the horse here and get going. It bothers me we are not moving fast enough and I hope you can help us in that respect.

Dr. CANTLON. The technical issues for interim storage are trivial. The technical issues are trivial.

Mr. MYERS. How about the political?

Dr. CANTLON. The political issues are the difficulty.

Mr. MYERS. We run into that.

What is going to be difficult, too, once we start taking this waste away from the site where it is now presently held, is the transportation problem. We are getting mail right now—I am sure all of us who have been on this committee any length of time—are getting mail saying, "Yes, we think we ought to get that nuclear fuel out of our community, but don't run it down that railroad track past our high school." Or, "Don't put it on a truck going by the senior citizens home." And we run into this problem constantly: that, yes, we want to get it out of there, but how? They just can't pick it up.

Are you giving this any consideration? We know how to move it. We know how to develop the casks.

Dr. BREWER. The fuel got into the community somehow. It was transported there. We have a long history of transporting nuclear products around the country safely. The issue of getting rid of the nuclear products. Again, from the technical point of view, transportation is not an issue. The issue is one of perception. We come back to that, which is to say it is politics.

Mr. MYERS. It is emotions and politics, yes.

Dr. CANTLON. Hauling a tank load of propane through the area is I think substantially more risky.

Dr. BREWER. Much more dangerous.

Dr. CANTLON. Much more risky than the way in which we handle nuclear material. The risk is far less.

Mr. MYERS. Try to get a liability policy for a butane truck right now. You are exactly right, yes. I hate to bring that up because now we are going to have people say, "Oh, my gosh, we are going to stop delivering butane."

The licensing is costing a lot right now. How many delivery trucks are there right now in rural America delivering gas? So it is a real threat.

But again perception is what we have to deal with here, and so you can help us in that respect, too, I think. And your task is monumental, as ours is. But again, we rely upon you for the technical knowledge to give us the momentum to keep going.

You carried over $523,000 from this year to next year unobligated. Was that because you aren't fully staffed?

Dr. CANTLON. Yes.

Dr. BREWER. It is the Board members that we don't have on board. Fortunately, sir, we have the staff so we can do our job at that level. We don't have the members.

Mr. MYERS. Well, the five board members is what I was referring to; I think we discussed it here a moment ago. When are they going to be filled? What does the White House tell you? How soon are they going to give you help?

Mr. CONDIE. They are in the process now of reviewing nominations from the National Academy of Sciences.

Mr. MYERS. They never do that down there; don't you notice?

Mr. CONDIE. One of the considerations beyond other appointments in our case would be the ethics matters that they have to consider because we try to be above all question.

Mr. MYERS. That will be a new thing for them to consider. It might be worthwhile for them to do. Maybe you wouldn't have five vacancies.

Dr. CANTLON. I think Congress wisely put a stipulation in our makeup that none of our members could be funded by any of the DOE or nuclear waste or the power industries, wisely so. But when you look for expertise in those fields, 90 percent of them will in fact be gainfully employed some way in that area.

Mr. MYERS. I could go back to the record and see this, but as Board members, how many days a month do you participate and work?

Dr. BREWER. Well, I can speak for myself. I am a dean of a very active school at the University of Michigan and I put in about 62 days last year on Board activities. Each of the members is budgeted I think at the rate of about 80 days, and our chairman because he has more activities in D.C. and is actually managing the staff to some extent, is up to 100 and something like that.

Mr. CONDIE. One hundred ten.

Mr. MYERS. Well, that gives him time to do something.

Dr. BREWER. It is a very interesting thing how we are using our knowledgeable senior citizens here, sir.

Mr. MYERS. Senior citizen? Thank you. We both are sharing in that. I wish you guys were that appreciative here.

Dr. BREWER. Actually it is a very serious point because the amount of time we have to invest to do the job well is often more than someone in my position can really afford. So you will notice we have a number of very distinguished scientists who are emeritus, quite vigorous and active. They have the time and the civic commitment to see this thing through. I think I speak for all my colleagues on the Board; it is really a remarkable collection of folks.

Mr. MYERS. Joe?

Mr. KNOLLENBERG. Mr. Chairman, if I could just very quickly, I am trying to get a grip on this last comment that you made. And, by the way, I am a fellow Michiganer. Don't hold that against me. Just so I understand the numbers on this, though, you said that approximately $2.3 million was used for personnel?

Dr. CANTLON. Yes.

Mr. KNOLLENBERG. I presume what you are doing is adding in the $158,000 for full-time permanent staff; $30,000 for other personnel compensation, plus your employee benefit cost. Is that how you come up with that number?

Mr. CONDIE. All benefits, full-time staff, Board members, consultants.

[Additional information follows:]

Full-time permanent staff	$1,507,000
Members and consultants	558,000
Other personnel compensation	30,000
Special personal services	10,000
Benefits	346,000
Total personnel costs	2,451,000

Mr. KNOLLENBERG. I have one question on travel—is the travel you were discussing during this last question on average? They say here there is an average of 10 trips during the year with about 5 days per trip or 50 days for the entire group of you. You may be traveling more than that, but has that been pretty consistent historically?

Mr. CONDIE. Yes.

Dr. BREWER. I think it is on average but there is variation according to the various Board members. I have been traveling much more because I am having to cover now for a panel where one of the board members is gone.

Mr. KNOLLENBERG. I am not disputing that, but on average are these numbers reflective?

Dr. BREWER. Yes, they are.

Mr. KNOLLENBERG. That was my only question. Thank you, Mr. Chairman.

Mr. MYERS. Talking about storage again and other countries where they handle their storage: has the Board visited France where they are doing a pretty good job of their storage? Could you pass any judgment on the job France is doing and why we can't do something similar?

Dr. CANTLON. The Board has visited 10 countries and looked in substantial detail at their total nuclear waste management system. We think France is doing an excellent job. And we visited Japan in May. We think Japan will in fact pass France in the near term in terms of the technical skill and sophistication with which they are approaching it and they are approaching it from the same way, reprocessing.

Mr. MYERS. Japan is reprocessing now.

Dr. CANTLON. Yes. They are doing some internally, and of course you have heard recently of their receiving an overseas shipment from things they sent to France for reprocessing.

Mr. MYERS. Okay. Well, thank you very much for your testimony and the job you are doing. If you have some recommendations don't hesitate to provide us with any unsolicited information and suggestions where we can do a better job and help solve this problem our country is facing.

You are the experts—I will give you credit for that—and we are not. But we have the responsibility, along with you. If we are going to solve the waste problem, we are going to have to start making some difficult decisions this year.

I think about the future of Yucca Mountain and how we are going to provide something in an interim period, so we do need your advice very much. If you see something that we haven't seen, please don't hesitate to volunteer it. Each of us have some questions we will provide for the record. Thank you very much for your testimony. Thank you for the job and the time you are giving.

Dr. CANTLON. Thank you, sir.

Mr. MYERS. The committee will stand adjourned until 2 o'clock this afternoon.

[Questions and answers for the record, the prepared statement of the witness, details of the FY 1996 budget request of the Nuclear Waste Technical Review Board and supplementary information follow:]

Subcommittee on Energy and Water Development
Committee on Appropriations
U.S. House of Representatives
Hearing on NWTRB Fiscal Year 1996 Appropriation Request
March 16, 1995

Questions from Chairman Myers

1. *As an independent Board charged by Congress to review scientific aspects of the Department's plans for disposal of high-level radioactive waste, the Nuclear Waste Technical Review Board is uniquely situated to comment upon the Yucca Mountain criticality debate. Has the Board undertaken an analysis of the criticality theories offered by Dr. Bowman at Los Alamos National Laboratory?*

Ans. Under certain conditions, the disposal in a geologic repository of radioactive material with high concentrations of uranium or plutonium could generate a self-sustaining nuclear reaction. This situation is called in-repository "criticality." In a well-designed repository for spent fuel from civilian reactors, criticality is a very remote possibility.

Criticality, if it were to occur in such a repository, would not necessarily lead to a nuclear explosion. Despite recent headlines, the potential for in-repository criticality has been recognized for years, if not decades. The Board has not reviewed Dr. Bowman's paper. However, we have addressed the issue of in-repository criticality at past meetings and are scheduled to do so again at our April 1995 meeting. At that time, the DOE has been asked to discuss its current plans for analyzing in-repository criticality and to update the Board on the DOE's response to Dr. Bowman's theory.

In a paper drafted by Drs. Bowman and Venneri at Los Alamos National Laboratory (LANL), weapons-grade plutonium (dispersed in a borosilicate glass "log") is disposed of in an idealized repository. It is not yet known how relevant the assumptions in this paper might be to a repository at Yucca Mountain, which will be designed to hold utility spent fuel and some defense waste from reprocessing. (Weapons-grade plutonium is not currently slated for disposal in Yucca Mountain.) First, it is not clear whether the idealized conditions used in this paper are realistic. Second, it is more difficult to achieve criticality with the plutonium in commercial spent fuel than with weapons-grade plutonium. In any event, extrapolating calculations for glass logs containing weapons-grade plutonium to the more impure plutonium in utility spent fuel will be difficult.

[illegible]
CAMERA [illegible]

The scientific debate about Dr. Bowman's theories has been confined thus far to LANL. However, it is our understanding that Dr. Bowman's paper and a rebuttal paper by those who do not agree with Dr. Bowman will be submitted to a peer-reviewed journal. We believe this is an appropriate process for beginning to resolve this issue. Making firm conclusions about Dr. Bowman's theories at this time would short-circuit the peer review process.

2. *When do you expect the White House to make nominations to fill the five vacancies on the Board?*

Ans. The White House is currently screening technically qualified Board candidates nominated by the National Academy of Sciences. As in the past, the care given to identifying nominees who also must satisfy the rigorous conflict of interest requirements of the Nuclear Waste Policy Act has slowed the appointment process. This careful screening is necessary to assure that the Board retains its credibility, which is the foundation of its effectiveness. We understand that the White House is actively working to fill the five Board member vacancies. It is our hope that these appointments will be made soon.

In any case, one legislative change that could substantially facilitate the work of the Board would be to amend the Nuclear Waste Policy Act to provide for automatic extensions of the terms of Board members until such time as they have been reappointed or their replacements have been appointed. Because of the comprehensive nature of the program and the breadth of scientific and technical expertise required to adequately evaluate the program, the loss of a single Board member can make the Board's work more difficult. To operate at peak effectiveness, the Board should have its full complement of eleven members, which is something it has never had. Our budget request assumes that the five new members will be named to the Board during this fiscal year.

3. *Do you have any comment on the recent decision of the Mescalero Apaches to pursue development of a monitored retrievable storage facility on tribal lands in cooperation with private utilities? Will the Board have any role in evaluating technical aspects of the plan?*

Ans. There are no real technical impediments to building or transporting spent fuel to such a facility. Under current law, both federal and private facilities for commercial spent fuel storage would be licensed by the Nuclear Regulatory Commission. The difficulties associated with developing a private storage facility, as with the development of any storage option, are primarily political and institutional and are mostly related to public concern over siting of the facility and the public's perception of risk related to transporting the waste. The Board is charged by Congress to review only those activities undertaken by the *Secretary of Energy* to manage commercial spent fuel and high-level waste. Therefore, unless the Board's mandate is changed, we will not be formally evaluating any specific plans for a private interim storage facility. However, we plan to issue a report in the next few months that will analyze the technical and nontechnical implications of the various options for extended storage of spent fuel.

4. *Has the Board formulated any opinions on nuclear waste legislative proposals pending in Congress? In particular, do either the Johnston bill (S.167) or the Upton bill (H.R. 1020) significantly impact the scientific effort associated with the nation's current nuclear waste policy as articulated in the Nuclear Waste Policy Act?*

Ans. The Board has not taken a position on any of the legislative proposals that have been introduced. However, some proposals could shift the emphasis of national policy on spent fuel and high-level waste management, at least in the short term, from disposal to storage of utility spent fuel. It is important to recognize that the repository site-characterization program at Yucca Mountain is at a critical stage where actual underground excavation is currently underway. Maintaining the momentum of this very important work will require a consistent and predictable commitment of funds. The Board has some concern that, should a shift in policy toward storage occur, funds for site-characterization could be constrained. Diverting funds from the site-characterization program at this critical time could have an adverse effect on the development of a permanent repository at Yucca Mountain not only by reducing the amount of scientific and technical work that could be done but also through loss of the site-specific expertise of professionals who work on the program. Even if the decision is made to change national policy to emphasize storage of spent fuel, continuing a program of site investigations to confirm the feasibility of disposal will be important in helping alleviate concern that storage will be the final, not the interim, solution.

5. Please describe generally the status of the Department's efforts to design waste packages and develop multi-purpose canisters for spent nuclear fuel. Does much technical research and development remain in this area?

The DOE has initiated a procurement process for a multipurpose canister that can be used to store and transport spent fuel. These new dual-purpose canisters can be designed and produced using existing technology. However, it is not clear at this point that the MPC will be compatible with waste packages that will be used for disposal of the commercial spent fuel in a repository. The Board has encouraged the DOE to take into consideration requirements for a disposal waste package as it develops its MPC concept.

The disposal waste package is a critical part of the engineered barrier system that will be used to isolate the radioactive waste in the repository from the accessible environment. Deciding which waste package design is most appropriate requires both a knowledge of what the repository environment (e.g., temperature) will be and extensive testing of materials degradation (corrosion) that will take up to ten years to complete. This testing began in earnest last year after several years of delay. It should be continued and adequately funded. The DOE also needs to carry out research on waste package fabrication, including welding, as well as developing methodology for nondestructive examination of metals and welds in the presence of ionizing radiation.

6. *Your testimony notes that the Board has, on several occasions, criticized the Department's, "allocation of resources as fundamentally inconsistent with the optimistic work schedule the DOE set for itself." Does the Department's budget for science education activities perpetuate this inconsistency?*

Ans. In the past, the DOE has allocated a high proportion of its total program funds to overhead and infrastructure costs, thereby limiting the amounts available for critical scientific work. In addition, the DOE has established a very optimistic schedule for determining site suitability and applying to the NRC for a license to construct a repository, should the site prove suitable. The Board has expressed its concern that the OCRWM's allocation of such a high proportion of its funds to overhead and infrastructure costs makes it even more difficult to obtain the data necessary to make site suitability and licensing decisions in accordance with its ambitious schedule. The Board's primary concern has been that to meet this schedule, critical scientific work would have to be truncated. The costs of the DOE's science education activities, while they may be part of overhead costs, are so small relative to other overhead costs that eliminating them would not significantly enhance the scientific program. Furthermore, continuing to inform the public is an essential requirement for this kind of undertaking.

7. *It appears that the interstate transportation of nuclear waste is one of the more politically challenging aspects of nuclear waste storage. Could you please comment on the technical aspects of nuclear waste transportation? What scientific or technical hurdles, if any, must be overcome in order to plan and develop a nuclear waste transportation network?*

Ans. Numerous past studies and three decades of experience in this and other countries with these activities have shown that the health and safety risks associated with transporting spent fuel and high-level radioactive waste are small. The Office of Civilian Radioactive Waste Management has not yet started developing a transportation network on the scale that will be necessary to move large quantities of spent fuel from various locations in the country to a storage facility or a repository, should either begin operation. However, development of such a network and providing technically sound assessments of system safety do not appear to present any insurmountable technical challenges. The DOE will have to address a number of technical issues. Among these are (1) the weight of the MPC overpack, (2) safe handling of the spent fuel, (3) a system for tracking waste shipments, and (4) route-specific factors. As you point out, even though there are no insurmountable *technical* hurdles, transporting nuclear waste may be *politically* challenging.

Question from Mr. Bevill

1. *In several instances in your testimony, you indicated that sometimes the most onerous problems in dealing with the storage of our radioactive waste may be political or process oriented. You cited a 1993 Special Report of the Board that observed that the task of providing safe storage of spent fuel does not appear to present any substantial technical problems. Could you please elaborate on what you mean by this.*

Ans. Safely storing spent fuel does not appear to present any serious technical problems. The Nuclear Regulatory Commission has found that spent fuel can be stored safely — in pools or in dry storage casks — for at least 100 years. The safety risks associated with transporting spent fuel also are quite small. Furthermore, constructing and operating an interim storage facility do not present any significant *technical* challenges. Even though from a technical point of view the risks associated with spent fuel storage are quite small, the public's *perception* of risk may be a very significant factor as decisions are made about interim storage options.

Full Statement of

Dr. John E. Cantlon, Chairman
Nuclear Waste Technical Review Board

before the

Subcommittee on Energy and Water Development
Committee on Appropriations
U.S. House of Representatives

March 16, 1995

Statement of
Dr. John E. Cantlon, Chairman
Nuclear Waste Technical Review Board
March 16, 1995

Chairman Myers and members of the Subcommittee: Thank you for this opportunity to appear before you this morning. I am John Cantlon, Chairman of the Nuclear Waste Technical Review Board and former vice president for research and dean of the graduate school at Michigan State University. With me this morning is another member of the Board, Dr. Garry D. Brewer, who is dean of the School of Natural Resources and Environment at the University of Michigan. We are pleased to be here today to present the Board's appropriation request for fiscal year 1996.

I will begin, this morning, with a summary of our appropriation request followed by a brief review of the Board's charter and recent accomplishments as well as future activities. I also will highlight the Board's most recent recommendations concerning the Department of Energy's (DOE) civilian radioactive waste management program. These were included in the Board's December 6, 1994 letter to the program and are in our upcoming 11th report to the Secretary of Energy and Congress. Mr. Chairman, I ask that my full statement and the attachments referred to be included in the record of these hearings.

The Board's appropriation request for fiscal year 1996 is $2,970,000 in new budget authority. When combined with an anticipated unobligated fiscal year 1995 balance of $523,000, the Board's aggregate funding requirement for fiscal year 1996 is $3,493,000. These funds will be utilized by the Board as it conducts its Congressionally mandated review of the DOE's civilian radioactive waste management program.

Overview

Finding the means to dispose of our nation's high-level radioactive waste is an issue of long-standing importance dating to the 1957 study by the National Academy of Sciences (NAS). There is a continuing worldwide scientific consensus that permanent isolation in mined geologic formations is the safest, long-term option for high-level radioactive waste disposal where risks to public health and safety extend for thousand of years. Mined geologic disposal is the primary approach being pursued in the United States and in other countries.

The DOE's Office of Civilian Radioactive Waste Management (OCRWM) is responsible for transporting and disposing of our nation's high-level nuclear waste — spent fuel from civilian nuclear plants, along with about 8,000 metric tons of high-level defense waste from reprocessing. As directed in the Nuclear Waste Policy Act Amendments of 1987 (NWPAA), the DOE is characterizing a site at Yucca Mountain, Nevada, to determine its potential suitability for construction of a permanent repository for nuclear waste.

The Congress created the Nuclear Waste Technical Review Board (Board) as an independent executive agency and assigned it the responsibility of providing an unbiased source of expert advice on the technical and scientific aspects of the DOE's work in this area. The Board's mission is simply stated in the NWPAA as follows:

> *The Board shall evaluate the technical and scientific validity of activities undertaken by the Secretary after the date of the enactment of the Nuclear Waste Policy Amendments Act of 1987, including (1) site characterization activities; and (2) activities relating to the packaging or transportation of high-level radioactive waste or spent nuclear fuel.*

We believe the Board's mission is of significant national importance. The program for which the Board must provide peer review is politically highly controversial, is characterized by complex scientific uncertainties, and extends over several decades. The Board's oversight role is intended to provide essential scientific and technical credibility to a Federal program that has been plagued over the years by a lack of public trust and confidence.

Board Membership

The law stipulates that Board members shall represent a broad range of scientific and engineering disciplines relevant to nuclear waste management. Members are appointed by the President from a list of candidates nominated by the National Academy of Sciences. The first Board members were appointed on January 18, 1989. The terms of four members expired this past April, leaving only six members. The White House is currently acting on NAS nominations to fill the five vacant member positions. The six current members are listed below.

- Dr. John E. Cantlon replaced Dr. Don U. Deere as Chairman of the Board in April 1992. Dr. Cantlon is vice president emeritus of research and graduate studies and former dean of the graduate school at Michigan State University, East Lansing. His field of expertise is environmental science.

- Dr. Clarence R. Allen is professor emeritus of geology and geophysics in the seismological laboratory at the California Institute of Technology, Pasadena.

- Dr. Garry D. Brewer is dean of the School of Natural Resources and Environment and professor of resource policy and management at the University of Michigan, Ann Arbor.

- Dr. Edward J. Cording is professor of civil engineering at the University of Illinois at Urbana - Champaign, and a specialist in underground engineering.

- Dr. Donald Langmuir is professor emeritus of geochemistry in the Department of Chemistry and Geochemistry at the Colorado School of Mines in Golden.

- Dr. John J. McKetta, Jr. is the Joe C. Walter Professor of Chemical Engineering emeritus at the University of Texas, Austin.

The five Board vacancies are in the areas of hydrology, systems analysis, transportation, engineering/materials science, and radiobiology/health physics. The following three members whose terms expired last April have been retained as consultants until appointments to the vacant positions have been made by the White House.

- Dr. Patrick A. Domenico is the David B. Harris Professor of Geology at Texas A&M University, College Station, and a specialist in hydrology.
- Dr. Dennis L. Price is a professor in the Department of Industrial and Systems Engineering, and is director of the Human Factors Engineering Center at the Virginia Polytechnic Institute and State University in Blacksburg.
- Dr. Ellis D. Verink, Jr. is a Distinguished Service Professor emeritus of Metallurgy and former chair of the Department of Materials Science and Engineering of the University of Florida, Gainesville, and a specialist in corrosion.

The Board is the *only* agency charged by Congress with providing an ongoing independent and unbiased review of all technical and scientific aspects of the DOE's efforts to dispose of spent fuel and high-level radioactive waste. During the six years since its formation, the Board has developed the knowledge and expertise envisioned by the Congress. The function being served by the Board cannot be accomplished by any other entity in existence, either within the Federal government or outside.

Board Activities

During the past five years, the Board and its panels have sponsored numerous meetings and technical exchanges with the DOE and its contractors, the Environmental Protection Agency (EPA), the Nuclear Regulatory Commission (NRC), the state of Nevada, Native Americans, utilities, and state utility regulators. Members and staff have attended a variety of relevant technical conferences, symposia, and workshops. They have participated in many field trips to examine geologic, engineering, and ecological features in the area around the proposed repository site at Yucca Mountain.

Our most recent efforts, Mr. Chairman, encompass those activities related to the DOE's new program approach to civilian radioactive waste management that prioritizes determining the suitability of Yucca Mountain as the site for a underground high-level waste repository. Our review also includes activities related to

- surface-based studies and underground exploration and testing at Yucca Mountain,
- interim storage and transportation, and
- waste package and repository design.

In several instances, however, we have found that along with undertaking a meaningful evaluation of the technical and scientific aspects of the program, we needed to acquire a general understanding of the related nontechnical factors, such as management, that were affecting the program.

Among the critical institutional factors of concern are schedules and program funding as well as the question of when the DOE will be in the position to begin accepting spent nuclear fuel from nuclear utilities. Although outside the principal purview of the Board, these nontechnical factors have important implications for the scientific and technical integrity of the Federal program. The Board therefore has made the DOE aware of their potential implications for the technical program.

Ongoing Board Concerns

As the Subcommittee is aware, beginning with the 1982 Nuclear Waste Policy Act (NWPA) the Federal government's civilian radioactive waste program has been driven by overly optimistic schedules. Following enactment of the 1987 Amendments, the DOE's Office of Civilian Radioactive Waste Management proposed a comprehensive set of site-characterization activities with an expectation of subsequent large budget increases. However, partly out of general concern for the Federal deficit, the DOE did not ask for, nor did the Congress appropriate, the necessary funds to accomplish the scope of tasks that the OCRWM had set out for itself. Furthermore, a substantial share of the appropriations that the program did receive went to fund overhead and infrastructure rather than direct project costs.

On several occasions, our Board has criticized the DOE's allocation of resources as fundamentally inconsistent with the optimistic work schedule the DOE set for itself. Among the Board's recommendations for completing DOE-scheduled activities were (a) establish priorities and intermediate goals based on a thorough understanding of the overall waste management system; (b) allocate more money to scientific studies and less to overhead and infrastructure costs; and (c) set realistic target dates for achieving important intermediate goals, such as beginning underground excavation and testing and determining site suitability.

New Program Approach

The Board is encouraged by the changes that the DOE has initiated over the last year and hopes that the program's managers will be successful in eliminating any duplication of effort among contractors that may have occurred over the years. The Board also wishes to commend the current DOE and OCRWM leadership for their recognition of the need for these changes and willingness to tackle a job made more difficult by unrealistic schedule deadlines and years of overly optimistic budget assumptions that did not materialize as actual budget requests.

Since Dr. Dreyfus took over as director of the OCRWM a year ago, significant progress has been made in dealing with this legacy. The December 1994 *Civilian Radioactive Waste Management Program Plan* is an attempt by the DOE to refocus its resources on important activities such as those required for determining site suitability. However, we would observe that the number of contractor organizations remains quite large and staffing continues to grow. For example, in the first four months of this fiscal year, there was an increase of 330 full-time equivalent contractor personnel at the OCRWM — up to 2,946 FTE's — or a 12.6 percent increase. However, an increasing number of contractor organizations now report through the M & O, which should begin to improve the overall management of the program.

For the *first* time, the DOE has the elements of a mission statement for its civilian radioactive waste management program that are reflected in the current *Program Plan*. This plan is geared to three intermediate milestones. First, the DOE anticipates making a decision in 1998 about the technical and scientific suitability of the Yucca Mountain site. Second, if the site is found technically suitable the Secretary of Energy, in the year 2000, would recommend the site to the President for development as a repository, after evaluating environmental, transportation, and socioeconomic issues through the development and review of an environmental impact statement (EIS) for the proposed repository. And, third, if the site is approved, the DOE would then submit in 2001 an application to the Nuclear Regulatory Commission for a license to construct a repository.

Currently, the Board is reviewing the December 1994 *Program Plan*. The results of our initial review will be addressed in the Board's 11th report, which will be provided to you in two weeks.

Recent Progress and Improvements

I would like to take the opportunity at this point in my testimony to provide the Subcommittee with the Board's perspective on the improvements and progress that have been made in this program since Dr. Dreyfus assumed responsibility for it, and some concerns of the Board that still remain.

It is our preliminary view, from what we now know, that there are risks as well as opportunities associated with DOE's new approach. Among the risks are the increased technical and scientific uncertainties that will be created because less data and analysis than previously planned will be available prior to determining site suitability and applying to the NRC for a license to construct a repository. Among the opportunities is the chance to refocus and streamline the program and to establish clear, near-term goals against which real progress can be demonstrated, although achievement of the long-term objectives of the new approach will not be seen for many years.

The determination of site suitability is the first major milestone in repository development under the new approach. If the DOE finds the Yucca Mountain site suitable and the President approves it for development as a repository, the DOE's efforts to successfully *demonstrate* that it can construct a safe radioactive waste repository become critical. If the DOE does not present its case clearly and convincingly to the Nuclear Regulatory Commission, the DOE may be faced with costly and time-consuming delays during the licensing process. Further, the review of the environmental impact statement provides another occasion for contesting the basis for the DOE's site-suitability determination.

As part of our technical and scientific evaluation of the program, the Board has discussed the need to ensure that, in the interest of safety, adequate funding needs to be guaranteed during the full retrievability period both to complete the additional testing requirements and to cover the costs of retrieving the waste for any purpose, should that need arise.

One important area that the Subcommittee may wish to explore is the adequacy of funding over the very long term for the testing, monitoring, and possible spent fuel retrieval that is envisioned by the DOE for approximately 100 years once the waste has been emplaced in a repository.

In response to these concerns, I would like to highlight some of the recommendations that the Board will be making in its upcoming report. Some of them were made in past reports in some form but remain pertinent.

Board Recommendations

First, there is a need to fully articulate a waste isolation strategy for the repository and to set priorities, accordingly.

Before priorities can be set there is need for a clear and coherently articulated waste isolation strategy that takes into account the salient characteristics of the Yucca Mountain site and the ability and desirability of specific repository engineered barriers to enhance waste isolation. This is particularly important given the need to evaluate the DOE's emerging repository thermal-management plans and the additional programmatic emphasis that is being placed on engineered barriers, extended retrievability, and post-emplacement monitoring.

The waste isolation strategy needs to be robust enough to accommodate possible changes in the basic criteria that will be used to assess the performance of the proposed repository and the standards and regulations that will be used to license the repository, which are currently undergoing review by the National Academy of Sciences in accordance with the 1992 Energy Policy Act.

There also is need for a management and organizational commitment by the DOE to develop more systematic and effective ways of using iterative total system performance assessments to guide site characterization and to review work priorities at Yucca Mountain. The use of performance assessments becomes even more critical now, if the program increases its reliance on confirmatory testing — as opposed to providing more comprehensive data and analysis prior to applying for a license to construct the proposed repository.

In the past, the DOE has not given adequate consideration to the interdependent nature of the elements of the waste management system, from the generation of the waste through its packaging, storage, transport, and ultimate disposal. A clear understanding of the waste management system and all its linkages is essential to developing a coherent and integrated program.

Second, the DOE should examine carefully the experience of others during the site-assessment process; particularly the influence of nonscientific and nontechnical factors.

In April 1994, the Board examined the experiences of others in assessing potential sites for critical or highly controversial facilities, such as low-level radioactive waste repositories, hazardous waste facilities, nuclear power plants, and other large engineering projects. Much can be learned from these experiences.

Several commonalities emerged that are applicable to the Yucca Mountain project: (1) the importance of having clear strategies for site assessment, site-suitability determinations, and licensing; (2) the significance of uncertainty and the use of expert judgment; (3) the inevitable occurrence of surprises as site investigations proceed; (4) problems caused by technical and institutional overconfidence; and (5) the importance of independent technical review, quality control, and clear regulations.

But, equally important, political and process-oriented issues were found to be critical, often overriding *technical concerns*.

Third, the DOE needs to place greater emphasis on accelerating the underground exploration and testing program.

Getting underground to look at the site's complex geology is critical in determining whether the site is suitable for repository development. This recommendation, which was first made by the Board in 1991, remains pertinent. Therefore, in its December 6, 1994, letter to Dr. Dreyfus (which is attached), the Board indicated a need for substantially more underground excavation than is planned by the current program.

Fourth, unrealistic schedule deadlines that cannot be achieved also serve to increase frustration and erode confidence in the program. The DOE should establish realistic schedules for achieving its important intermediate milestones, and these should be reflected in current statutory deadlines.

We believe that schedules are vital if program momentum is to be maintained and progress measured. We also believe that critical technical and scientific activities should not suddenly be truncated or eliminated under the combined pressure of arbitrary schedule deadlines and budgetary constraints. Without sufficient surface-based and underground data and accompanying analyses, the DOE will be forced to rely heavily on expert judgment and bounding assumptions, which may be less effective in winning both technical and public confidence. The existing schedule may not provide sufficient time to complete the necessary site exploration; for example, excavation across the repository block to explore known, and possibly unknown, geologic features at the repository level.

The Board thus continues to be concerned that, under the current schedule, important long-term, and perhaps more expensive, activities (e.g. an east-west excavation across the repository block at the repository level, initiation of in-situ thermal testing, and excavation below the repository in the Calico Hills rock formation) may be delayed or replaced by other, less efficacious, shorter-duration activities.

An equally important concern of the Board is that the current schedules allow little time to accommodate the kinds of surprises that are often encountered worldwide in underground projects.

The Board recognizes the demands being placed on the program by overriding concern for meeting the 1998 and 2001 deadlines. Nevertheless, the Board is very concerned that important program decisions are being driven by unrealistic deadlines at some risk to the program and the eventual licensing of the site for repository development.

Fifth, the DOE should continue to allocate more of its resources to research and development of engineered barriers, including a robust, long-lived waste package.

Since it issued its first report in March 1990, the Board has underscored the importance of research related to the development of engineered barriers, including a robust, long-lived waste package, to enhance the long-term safety of the repository system, and help reduce uncertainties. It appears that the DOE plans to increase funding for waste package development; we hope this happens; it is a move the Board strongly endorses.

Immediate Opportunities for Improvement

Immediate opportunities do exist to improve many aspects of the DOE's program. Among the opportunities listed in our December 6 letter are increased emphasis on site suitability, the clear articulation of a waste isolation strategy, the setting of priorities, and the allocation of funds to focus on the development of a long-lived waste package. This (mid-course correction) also provides an opportunity to improve the interface between the DOE and the NRC so as to capture the full potential of the DOE's programmatic changes.

As the specifics of the OCRWM's new program approach evolve, the Board will continue to assess their technical and scientific implications. The Board also will be taking a close look at the timetables for important site-characterization activities as they are continually being updated, including timetables for underground excavation and testing and the determination of site suitability.

The results of these ongoing reviews will be communicated to the Congress and the Secretary as they are completed. However, whatever the outcome of our scientific and technical evaluation, the Board wishes to emphasize how critical it is for the DOE to set priorities for site characterization that are based on a coherent waste isolation strategy — not on how much testing can be accomplished within the constraints of the current schedule and available appropriations.

Interim Storage

As the committee is aware, recent attention has centered on interim storage, on which I would like to comment briefly. In its October 1993 *Special Report*, the Board observed that the *task of providing safe storage of spent fuel does not appear to present any substantial technical problems.*

Currently, there are approximately 30,000 metric tons of spent fuel stored at 75 reactor sites around the country, and this amount increases at the rate of about 2,000 metric tons per year. By 2030, approximately 87,000 metric tons of spent fuel will have accumulated. Therefore, even if a repository is constructed according to the DOE's schedule, substantial amounts of spent fuel will remain in storage at reactor sites for decades. To date, the implications of this extended interim storage have not been addressed by either the DOE or the utilities.

In the next few months, the Board will complete its technical review of this situation. The result of this technical review of the interim storage of spent fuel will be communicated to the committee and the Secretary when it is completed.

Fiscal Year 1996 Appropriations Request

In order to continue the Board oversight of this critical national program, the Board's funding requirement for fiscal year 1996 is $3,493,000. This request assumes an 11-member Board operating with a targeted staffing level of 22. It is proposed that the funding needs be met by:

(1) an appropriation of $2,970,000 in new budget authority, and

(2) carryover of an anticipated fiscal year 1995 unobligated balance of $523,000.

The guiding objectives underlying this budget request are to

- support the efforts of the Board members who are heavily involved in a congressionally mandated review of DOE's technical and scientific activities;

- maintain a small professional and support staff of the highest caliber commensurate with the status, abilities, and responsibilities of the Presidentially appointed Board, which it supports; and

- provide the tools and the resources for the Board and staff to effectively pursue the mission with which Congress has charged the Board.

The mission of the Nuclear Waste Technical Review Board deserves and requires the talent and reputation of individuals whose judgment and recommendations will be respected throughout the scientific community and by the public. Appointed Board members fill these needs. If these talents are to be effectively used, the Board requires a commensurate level of senior professional staff, consultants, and resource support.

Conclusion

In closing, I would like to observe that, with respect to the Yucca Mountain site, the Board has found no technical reason, from surface-based data collected so far, that would indicate that the site is unsuitable. However, *underground exploration and some testing at Yucca Mountain will be necessary for a site-suitability decision and a subsequent application for a construction authorization.*

The Board also believes that the current DOE and OCRWM leadership should be commended for recognizing the fundamental inconsistency among the schedule, the amount of work planned, and the funds made available to the program in the past.

I also would observe that the Board has made numerous assessments and recommendations to the DOE on the civilian radioactive waste management program in its past reports and letters.

One very important role the Board plays is that of catalyst for the technical community. By scheduling open, public meetings and asking detailed technical questions, the Board is able to affect the DOE's technical and scientific program as it unfolds. The Board helps the DOE to continuously evaluate its own activities; to examine the fundamentals of the program; and to iteratively set priorities and define the program's technical objectives. The Board also has been instrumental in increasing communication and coordination within the DOE and among DOE contractors and other organizations involved with or concerned about high-level nuclear waste disposal issues.

Drawing on the significant expertise of its members, consultants, and professional staff, the Board has provided an in-depth review of the technical aspects of the DOE's waste management program in other areas, including geology, geoengineering, hydrology, materials science, geochemistry, transportation, systems analysis, environmental science, risk and performance assessment, and public health and safety.

Continuing independence, objectivity, scientific competence, and freedom from conflicts of interest are critical to the Board's charge as a credible agency. Scientific and technical credibility is the foundation upon which the Board's activities and recommendations are based.

Thank you, Mr. Chairman, for this opportunity to appear before you this morning. Dr. Brewer and I would be pleased to answer your questions at this time.

ADDITIONAL DETAILS OF
Fiscal Year 1996 Budget Request

The Board's funding requirement for fiscal year 1996 is in the amount of $3,493,000. The Board's request for appropriation is $2,970,000, with the remainder of the need being filled by a $523,000 unobligated balance carryover from fiscal year 1995. This carryover resulted primarily from cost avoidance related to unfilled Board member and staff positions, and the travel and support expenses associated with those vacancies.

Historically, Board funding has been satisfied by a combination of appropriated new budget authority and carryover funds from prior years. Appropriation language provides that funds will "remain available until expended," and carryover has remained available for use in future years. Consequently, each budget year the Board has requested only that new budget authority (appropriation) needed, which when supplemented by carryover, has met its funding needs.

A detailed breakdown and justification of this request by object class follows.

Object Class 11.1 - Full-time staff - $1,507,000

The amount requested for full-time permanent staff represents the requirement to fund 22 positions. Because the technical and scientific evaluations of the Board are conducted by Board members themselves, the Board's enabling legislation provides that the Chairman may appoint and fix the compensation of not more than 10 professional staff members.

Also, the Chairman is authorized to appoint such clerical staff as may be necessary to discharge the responsibilities of the Board. The remaining twelve positions are support staff engaged in clerical, secretarial, administrative, publications, public affairs, and meeting logistics requirements for the Board.

This estimate assumes a 2.2% combined COLA and locality raise in January 1996, in addition to an average 2% merit increase for professional staff and 2% for promotions and step increases for support staff.

Object Class 11.3 - Other than full-time permanent staff - $558,000

The amount requested in this category represents compensation to Board members and compensation for the employment of experts and consultants.

Each member of the Board will be compensated at the rate of pay for level III of the Executive Schedule for each day the member is engaged in work for the Board. It is estimated that during the year each member will attend 4 full Board meetings, 4 panel meetings, and 4 other meetings or field trips. This estimate represents 80 workdays for each member during fiscal year 1996. Furthermore, it is expected that the Chairman will spend an additional 14 days conducting Board business. This estimate assumes a 1.5% COLA in January 1996.

Also included in this object class are an estimated 300 consultant days required to support the Board, its panels, and the professional staff. These consultants will be hired under the authority provided by the Board's enabling legislation, which permits the Board to pay such experts and consultants up to the daily rate of level IV of the Executive Schedule.

Object Class 11.5 - Other personnel compensation - $30,000

The amount provided in this area covers approximately 400 hours of staff overtime and performance awards under the OPM-approved Performance Management System. Most Board and panel meetings require considerable overtime to handle preparation and on-site meeting logistics.

Object Class 11.8 - Special personal services payments - $10,000

The amount requested in this area will support the use of reimbursable details from other government agencies.

Object Class 12.1 - Civilian personnel benefits - $346,000

The estimate in this category represents the government's contribution for employee benefits at the rate of 20% for staff (a mid-range estimate between CSRS and FERS employees) and 7.65% for members and consultants hired as special government employees.

Object Class 21.0 - Travel - $344,000

The amount requested for this object class includes travel costs for Board members, staff, and consultants to attend Board and panel meetings, other meetings to acquire technical and scientific data (including professional meetings and conferences), and/or site visits to review activities within the scope of the Board's mission. It is expected that members will attend 4 Board and 4 panel meetings, and will make 4 other trips during the year with an average length of 4 days each, including travel time. It is anticipated that each of the 10 professional staff members will travel on similar activities an average of 10 trips during the year with an average of 5 days per trip. Finally, consultants, for whom the Board reimburses travel expenses, are estimated to make a total of 24 trips, which include attending many of the Board and panel meetings.

Object Class 23.1 - Rental payments to GSA - $225,000

The estimate for this object class represents the amount the Board will pay to the General Services Administration for office space rental totalling 6,040 sq. ft. at an annual rate of $37.25 per sq. ft. This estimate reflects the congressionally mandated GSA rent reductions. The Board may have to relocate in December 1996 due to the expiration of the lease at the current location.

Object Class 23.3 - Communications, utilities, misc. - $63,000

The requested amount represents estimates for telephones, postage, express intercity delivery service, local delivery service, FTS - long distance telephone service, and mailing services related to management and use of the Board's mailing list. Since Board members are located throughout the country, it is important to distribute information to them on a timely basis. Also, intercity delivery service is a critical link in this communication network. Additionally, costs are incurred to ship materials to the many meetings held at locations throughout the country. The estimate includes installation costs to upgrade the phone system at the current location, or costs to be incurred in preparation for installation at the new location. Equipment costs related to the upgrade are included in object class 31.0.

Object Class 24.0 - Printing and reproduction - $33,000

The major items in this object class are copier maintenance, the publication of semi-annual and special reports to Congress and the Secretary of Energy, *Federal Register* publication of meeting notices, the production of press releases announcing meetings, and the printing and distribution of a newsletter and other informational materials for Board members and the public.

Object Class 25.1 - Consulting services - $80,000

The Board estimates it will contract with technical consultants to provide expertise currently not available from the members and professional staff.

Object Class 25.2 - Other services - $135,000

The major items in this category include court reporting services for an estimated 15 Board or panel meetings, meeting room rental and related services, maintenance agreements for equipment, computer network software maintenance, and miscellaneous supplies and services from commercial sources. This estimate includes costs to be incurred to prepare for relocation, and costs to upgrade the computer network. Hardware costs for the system upgrade are included in object class 31.0.

Object Class 25.3 - Services from other Government agencies - $66,000

This category includes GSA administrative support services (payroll, accounting, personnel, etc.), audit services from the GSA Inspector General, security clearances through the Office of Personnel Management, and miscellaneous other interagency agreements.

Object Class 26.0 - Supplies and materials - $44,000

Anticipated expenses include routine office supplies, subscriptions and library materials, costs for off-the-shelf technical reports and studies, and ADP software.

Object Class 31.0 - Equipment - $52,000

This estimate primarily represents equipment costs to upgrade the telephone and computer systems at the current location, or to prepare for the upgrades at the new location in December 1996.

NUCLEAR WASTE TECHNICAL REVIEW BOARD

Salaries and Expenses

(Including Transfer of Funds)

For necessary expenses of the Nuclear Waste Technical Review Board, as authorized by Public Law 100-203, section 5051, $2,970,000, to be transferred from the Nuclear Waste Fund and to remain available until expended.

(Energy and Water Development Appropriation Act, 1995)

NUCLEAR WASTE TECHNICAL REVIEW BOARD

Salaries and Expenses
Program and Financing (in thousands of dollars)

Identification code 48-0500-0-1-271		1994 actual	1995 estimate	1996 estimate
	Program by activities:			
10.00	Total obligations....................	2,650	3,373	3,493
	Financing:			
17.00	Recovery of prior year obligations...	- 50	---	---
21.40	Unobligated balance, start of year...	-1,672	-1,232	- 523
24.40	Unobligated balance, end of year.....	1,232	523	---
40.20	Budget authority (appropriation) (special fund, definite).........	2,160	2,664	2,970
	Relation of obligations to outlays:			
71.00	Total obligations..................	2,650	3,373	3,493
72.40	Obligated balance, start of year....	210	176	675
74.40	Obligated balance, end of year......	- 176	- 675	- 699
78.00	Adjustments in unexpired accounts...	- 50	---	---
90.00	Outlays.........................	2,634	2,874	3,469

NUCLEAR WASTE TECHNICAL REVIEW BOARD

Salaries and Expenses
OBJECT CLASSIFICATION (in thousands of dollars)

Identification code 48-0500-0-1-271		1994 actual	1995 estimate	1996 estimate
Personnel compensation:				
11.1	Full-time permanent..................	1,249	1,445	1,507
11.3	Other than full-time permanent.......	313	558	558
11.5	Other personnel compensation.........	24	30	30
11.8	Special personal services payments...	2	10	10
11.9	Total personnel compensation...	1,588	2,043	2,105
12.1	Civilian personnel benefits..........	260	331	346
21.0	Travel and transportation of persons.	252	334	344
23.1	Rental payments to GSA...............	225	232	225
23.3	Communications, utilities, misc......	46	61	63
24.0	Printing and reproduction............	13	33	33
25.1	Consulting services..................	58	80	80
25.2	Other services.......................	123	129	135
25.3	Services from government accounts....	47	66	66
26.0	Supplies and materials...............	33	44	44
31.0	Equipment............................	5	20	52
99.9	Total obligations.............	2,650	3,373	3,493

NUCLEAR WASTE TECHNICAL REVIEW BOARD

Salaries and Expenses
Personnel Summary

Identification code 48-0500-0-1-271	1994 actual	1995 estimate	1996 estimate
Total number of full-time permanent positions	22	22	22
Total compensable workyears:			
Full-time equivalent employment	21	27	27

Areas of Board Evaluation

The Board is organized into panels based on areas of technical expertise This facilitates the Board's evaluation of the Department of Energy's program to manage the disposal of spent fuel and high-level waste. Current areas of expertise include the following.

Structural Geology & Geoengineering

Hydrogeology & Geochemistry

The Engineered Barrier System

Transportation & Systems

The Environment & Public Health

Risk & Performance Analysis

Quality Assurance

Nuclear Waste Technical Review Board
1100 Wilson Boulevard, Suite 910
Arlington, Virginia 22209
Tel: (703) 235–4473
Fax: (703) 235–4495

Nuclear Waste Technical Review Board

The Challenge

Approximately 110 commercial nuclear power plants at 70 sites nationwide are producing highly radioactive wastes that require disposal. The challenge lies in designing a system that will provide safe long-term disposal of that waste. Current plans call for commercial spent fuel and defense high-level waste from reprocessing to be placed in a mined geologic repository.

Spent Fuel

- By 2030, when most existing commercial nuclear power plants in the United States have completed operations, experts predict that as much as 85,000 metric tons of spent fuel will require disposal.

High-Level Waste

- High-level wastes from defense-related reprocessing could total 9,000 metric tons by 2020.

Safe Disposal Requirements

- Regulatory agencies require that this waste be safely isolated from the public and the accessible environment for 10,000 years.

The DOE's Task

- In 1982, Congress assigned the Department of Energy (DOE) the task of designing a system to manage the safe disposal of commercial spent fuel and defense high-level radioactive waste.
- Congress has directed the DOE to evaluate one site, at Yucca Mountain, Nevada, for possible repository development.
- If Yucca Mountain proves suitable and meets licensing requirements, it could become the site of a permanent underground repository.
- Current plans call for constructing a facility with more than 100 miles of tunnels excavated about 1,100 feet below the surface of the mountain.

The Board's Role

The Nuclear Waste Technical Review Board has an important role to play in helping meet the challenge of safe spent fuel and high-level waste disposal.

Independent Technical Review

- Congress created the Nuclear Waste Technical Review Board in 1987. The Board is an independent agency within the executive branch of the federal government.
- The Board and its panels evaluate the scientific and technical validity of DOE activities in the spent fuel and high-level waste management program.
- The Board and its panels hold meetings across the country with representatives from the DOE and its contractors, the utilities, state and local governments, and other interested organizations and agencies. Meetings are open to the public.

Distinguished Membership

- Board members are nominated by the National Academy of Sciences for appointment by the President. They are selected on the basis of their distinguished service. Members serve four-year terms.

Conclusions & Recommendations

- The Board reports its findings, conclusions, and recommendations to the Congress and the Secretary of Energy at least twice a year.
- Board reports are available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Nuclear Waste Technical Review Board

Members

Dr. John E. Cantlon, Chairman
Vice President of Research and Graduate Studies Emeritus, Michigan State University

Dr. Clarence R. Allen
Professor of Geology and Geophysics Emeritus, California Institute of Technology

Dr. Garry D. Brewer
Dean of the School of Natural Resources and Environment, University of Michigan

Dr. Edward J. Cording
Professor of Civil Engineering University of Illinois, Urbana-Champaign

Dr. Donald Langmuir
Professor of Geochemistry Emeritus Colorado School of Mines

Dr. John J. McKetta, Jr.
Joe C. Walter Professor of Chemical Engineering Emeritus, University of Texas

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The following Board members' terms expired April 19, 1994. They will serve as consultants until the White House has appointed new members.

Dr. Patrick A. Domenico
David B. Harris Professor of Geology Texas A&M University

Dr. Dennis L. Price
Professor of Industrial and Systems Engineering, Virginia Polytechnic Institute and State University

Dr. Ellis D. Verink, Jr.
Distinguished Service Professor of Metallurgy Emeritus, University of Florida

Nuclear Waste Technical Review Board

Staff

William D. Barnard, Ph.D.
Executive Director

Dennis G. Condie
Deputy Executive Director

Sherwood C. Chu, Ph.D.
Transportation & Systems
Quality Assurance

Carlos A.W. Di Bella, Ph.D.
The Engineered Barrier System

Daniel J. Fehringer, Ph.D.
The Environment & Public Health

Russell K. McFarland, P.E.
Geoengineering

Daniel S. Metlay, Ph.D.
The Environment & Public Health
Risk & Performance Analysis

Victor V. Palciauskas, Ph.D.
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Leon Reiter, Ph.D.
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FRIDAY, MARCH 3, 1995.

NUCLEAR REGULATORY COMMISSION

WITNESSES

IVAN SELIN, CHAIRMAN
KENNETH C. ROGERS, COMMISSIONER
E. GAIL DE PLANQUE, COMMISSIONER
JAMES M. TAYLOR, EXECUTIVE DIRECTOR FOR OPERATIONS AND CHIEF FINANCIAL OFFICER
KAREN D. CYR, GENERAL COUNSEL
THOMAS J. BARCHI, ASSISTANT INSPECTOR GENERAL
RONALD M. SCROGGINS, DEPUTY CHIEF FINANCIAL OFFICER/CONTROLLER

Mr. MYERS. The committee will come to order.

Good morning, lady and gentlemen. We both have many responsibilities, so we are pleased to have you before us once again, and your prepared statements will be placed in the record, so you may summarize or proceed as you like.

OVERVIEW

Mr. SELIN. Thank you very much, Mr. Chairman. Before discussing the details of our budget request we would like to take this opportunity to provide just an overview of how we have been carrying out our operations with particular emphasis on the reform of these operations.

In the regulation of reactors, our two most important improvements are, first of all, to streamline our reactor licensing program and in particular to carry out a license renewal process, which will help reduce the regulatory impediments to renewing the 40-year operating license.

We consider this to be the most important reform in the licensing of power reactors. The second reform, one which your committee has been behind for a long time, is in the standard design certification and the combined construction permits and operating license for future nuclear power reactors. These are very powerful improvements.

We expect that the design certification rulemaking for the two standard reactor designs before the Commission, the GE Advanced Boiling Water Reactor and the Combustion Engineering System 80+ will be completed in fiscal year 1996. The safety analysis has already been done; the staff has finished their work.

Now, we have only the formalities of going through the rulemaking. As far as the regulation of nuclear materials is concerned, we are reevaluating the regulation of the medical use of by-product radioactive materials. Our objective is to see whether our regulation provides a significant benefit to public health and safety and if not, to roll back our regulation and let the States regulate the medical use of nuclear materials as they regulate many other medical questions.

We are continuing to look systematically for improved processes. We have already made what we think to be important improvements to our operations. We have eliminated a layer of management. We have combined two regional offices. We have closed a field office. We have tightened financial operations. We have done a much better job of closing old contracts and putting money back to be available for renewed obligations.

Our financial management efforts allowed us to propose a $12.7 million rescission in 1994 and after our 1995 request had been sent to the Congress we felt we could reduce that by $20 million as well, which was reflected in the enacted 1995 figures.

I would like to talk about license fees, a topic that gets a great deal of attention. We continue to meet the requirement of the Omnibus Budget Reconciliation Act of 1990. We recover approximately 100 percent of our new budget authority less the amount appropriated for the Nuclear Waste Fund, which is also money that comes from utility licensees, so as a result the NRC is not a net contributor to the deficit.

It is very painful to run a 100 percent fee recovery agency, but we do have the one benefit, not being a contributor to the deficit. The arbitrary steps that are often taken to reduce the deficit really don't affect us, so our budget is considered by your committee and the comparable one in the Senate on its own merits, not as to what the effect will be on the deficit, and we appreciate this. It is a great benefit to us, and as a result we will be proposing an extension of user fee authority through fiscal year 2000. But as the Energy Policy Act of 1992 called for, we did do a review of how this 100 percent fee recovery policy affects our licensees, and we came to the conclusion that certain costs should be deleted from the fee base.

Some NRC activities benefit entities who are not NRC licensees and who are therefore not assessed their fair share of fees. For example, some of the international activities we do really don't benefit the American licensees. We think they help the foreign policy and the overall defense of the Nation, but we don't see why our licensees should be saddled with those costs.

Some licensees bear the cost of NRC regulatory activities for other organizations. There are exemptions for Federal agencies, educational institutions, and small entities, and we think these are fair exemptions, but we don't see why the other licensees should have to pick up the difference. Also, there are costs to support the Agreement States Program, which currently are borne by the licensees and the States that the NRC regulates.

We think these are important programs, but they don't benefit the NRC's licensees and we don't think they should have to bear the costs. We still believe that the legislation should be changed to allow these items to be taken out of our fee base.

We have asked for this. It hasn't happened, and instead of just waiting for the legislation, we are going to do in 1995 what we can to make the conditions somewhat more equitable. We are going to take these unrecovered costs, and instead of just putting them on the other licensees in the same base, for instance, instead of putting the Agreement State costs on the other materials licensees, we will spread them across all the licensees, so that everybody pays a little bit of this cost rather than picking out one set of licensees to say you have to bear the total cost.

We are taking some steps to guarantee that fees will not change drastically from year to year, to smooth out the fees to give the licensees some much needed stability on the license costs. We will make these changes administratively. They do not, in our opinion, take away the need for legislation to make the overall program fairer, but within the current program we think this is a fair thing to do.

As far as our 1996 budget request is concerned, it is at $525.8 million, which in current dollars is held at the 1995 level, and is 3 percent less than inflation. There is a chart in the appendix to our full statement which summarizes this request by cost center and it illustrates reductions in the costs even after inflation. We have reduced the cost of our reactor program, there are small increases in our materials program to correct some well-recognized management problems in the past.

We have increased resources for decommissioning. We have continued our responsibilities for regulating United States Enrichment Corporation facilities. We have made what we consider to be essential improvements in regulating the use of radioactive materials. We have reduced current operations and reactor research without compromising our safety responsibilities.

There will be increases in the decommissioning program which are used to evaluate the cleanup of material at fuel facility sites in the Site Decommissioning Management Plan. We have about 50 sites in this Plan that should have been decommissioned a long time ago. They are really a public nuisance.

We are working very hard to get them properly cleaned up and decommissioned. As I indicated earlier, we are continuing to look for opportunities to tighten our financial operations further, and the fact is that our overall program is reduced by $15.5 million from 1995 to 1996, which more or less matches the inflation increases in our activities.

In short, we have been able to undertake additional responsibilities and to invest in those programs which affect the future, the streamlining of the regulatory process, renewal of reactor licenses, regulating standard reactor designs, and managing waste disposal while reducing our budget in real terms.

Just on a personal basis, I would like to thank the committee for the support that we have had from you in the past. We appreciate the support. We hope to continue to earn your confidence and to continue to enjoy the support in the future as we face what is really going to be a set of very difficult financial times in the next several years.

Mr. Chairman, this concludes our oral summary. We are available to answer your questions.

Mr. MYERS. Well, thank you, Mr. Chairman. Mr. Rogers, do you have any comment you want to make at this point?

COMMISSION FORMAT

Mr. KENNETH ROGERS. Well, nothing really to add to the Chairman's very fine summary. I would just like to address the question that I think you, Mr. Myers, have asked many times in the past. How does the Commission get together? How does it work.

Mr. MYERS. I see two missing. How could you dare be here with two of you missing?

Mr. KENNETH ROGERS. We have such a wonderful relationship that perhaps this has come about because we don't have any more than three of us. I don't know, but we do get on very well. I would like to say that I have been on the Commission now for about seven years and I would say that there has been a very professional relationship between and among the Commissioners, and I think it has been one that the public has been served very well by.

Mr. MYERS. Ms. De Planque.

Ms. DE PLANQUE. I would just second all of those remarks.

Mr. MYERS. Well, as some of the audience in particular may remember, some of the experiences we have had between the Regulatory Commission and this committee have not been exactly friendly. Years ago it was almost adversarial. We did not try to micromanage the Commission, but we felt like the Commission was not carrying out the kind of responsibility that the authorization placed upon you. We were frustrated, and I am sure we frustrated the Commission, but it was a very frustrating experience that we had each year when you had to come before us. I think everybody probably said, oh my God, we have got to do that again, meet that bunch.

We were not trying to micro-manage, but we were unhappy with what we felt was the lack of attention to the responsibility that the Commission had to the American people. So we appreciate the fact that there is a better relationship among yourselves and between us, too. I think that is very important because we both have a job to do and we try to carry that job out. You say you were reduced this year by $25 million? I don't find that.

NRC RESOURCES

Mr. SELIN. In 1995, the current fiscal year, we reduced our request. We came in formally to the Congress and asked to have our appropriation reduced by $20 million after the request came in because we squeezed that much more money out of our previous accounts by closing out uncosted funds. Our budget request for 1996 is essentially constant.

Mr. MYERS. I misunderstood you.

Mr. SELIN. It is a $15.5 million reduction in program, offset by a $15.7 million increase due to inflation.

Mr. MYERS. You have done a very good job, apparently, from the requests I see here, and we compliment you for that.

Mr. SELIN. Thank you.

Mr. MYERS. Most of your money does come from licensees. How, then, are you affected by the FTE reductions in the executive branch? You had to make some cuts?

Mr. SELIN. Yes, sir. Our program, the program that we have submitted to the Congress reflects the reduction in FTE that had been imposed on us, and I can just tell you that we are meeting the overall schedule that has been set out by OMB, which is 3 percent reduction by 1997 in total FTE. Every year we reduce our personnel 35 to 50 people, and that is reflected in the budget already.

Mr. MYERS. Are you going to have to make more cuts this year to comply?

Mr. SELIN. Yes, sir, our budget has a reduction of 33 positions from 1995 to 1996, and 41 from 1996 to 1997.

Mr. MYERS. How will you be able to absorb that without doing some damage to your mission?

Mr. SELIN. The answer is it will have an impact on the mission, but we—for instance, we have reduced an entire level of management. We started in 1993 with a supervisory to staff ratio of one to four.

In other words, one-fifth of our employees were in supervisory positions. Now, it is down to one to five, and our objective by 1999 is to get down to one to eight. We have too many small units, too much supervision. It was productive, but we just don't think that it is justified in this kind of an environment. We, as I outlined before, we reduced one of our regional offices. We have closed a field office.

There are management improvements that we could make. We believe that we can meet the FTE ceilings without having a significant impact on our safety. We are much more concerned about the budget ceilings that are being discussed now. We haven't finished our analysis, but we don't think we can meet those without having an effect on safety.

NUCLEAR MATERIALS AND NUCLEAR WASTE PROGRAM

Mr. MYERS. Tell us more about the nuclear materials and the Nuclear Waste Program. It is one of the areas in DOE we are deeply concerned about. The cleanup is just not getting its bang for the buck. Can you tell us about it?

Mr. SELIN. Yes, sir, it is useful to think about this program as having three components plus a sort of a specialty. The specialty is the safeguards and security to make sure that highly enriched uranium doesn't fall into unfriendly hands. Setting that aside, the program has three parts.

There is the fuel facility where we support the reactor program, the regulation of facilities that manufacture fuel and then the back end, the high level waste part, which I think you are referring to.

The second area has to do with the Agreement States Program, the relatively low level waste that the agreement States deal with, and then the third is the people that we supervise ourselves. The Fuel Program is intrinsically a Federal program. There is no real benefit, no real ability to delegate that to the States. A large amount of our effort goes into the high level waste program within that fuel area, and as you are well aware, the Department of Energy is changing their approach to high level waste, and we are changing our regulatory program to track this area.

We are really not a major player in the high level waste area at this point. It is signaled very far in advance what is acceptable to us and not acceptable to us from a safety point of view so the Department of Energy is not sandbagged, but their problems really are not affected very much by what we do. If anything, we help them by identifying some of the issues early rather than waiting until much later when they have invested much more money in these programs.

We are very much involved in efforts to decontaminate other sites. In fact, one of our major rulemakings this year is to set standards for decontaminating and decommissioning sites, whether they are old reactor sites or industrial facilities that have been used and put into disuse, and then there is just a whole collection of small programs which have not been very well managed on medical use of materials, industrial use of materials, which we are trying to develop a consistent approach and encourage more States to join the Agreement State program and get that regulation closer to the source.

NORTH KOREAN REACTORS

Mr. MYERS. Is the Nuclear Regulatory Commission involved in the cleanup of the reactor site in North Korea? Have you been asked to be involved?

Mr. SELIN. Yes, sir. Not in the cleanup, but in the possibility of building a new reactor site, the possibility of building the light water reactor sites in North Korea.

Mr. MYERS. But you have nothing to do with the cleanup of the waste?

Mr. SELIN. No, at the current sites, that is entirely a Department of Defense, Department of Energy function. Those are military reactors. The Department of Energy is the home of the expertise on those reactors. It is when you get to the civilian reactors that we have been somewhat involved. I expect we will become more involved in the future.

Mr. MYERS. Thank you.

Mr. Bevill.

COMMISSION FORMAT

Mr. BEVILL. Thank you, Mr. Chairman. Chairman Selin, we are pleased to have you and the Commissioners with us here again. I was just sitting here thinking about your two vacancies. I am not sure, but you may be better off just to have three commissioners.

Mr. MYERS. Maybe we would be, anyway.

Mr. BEVILL. I think it works more smoothly, and I remember when we would get to talking about back-bidding and all this—where they would stand and watch the contractor make a mistake. If they didn't have the authority to tell the contractor he was making a mistake, they would wait until he finished it and then make him redo it. We had some hard times with this Commission—I guess if you ask them, maybe they think we gave them a hard time—but it seems the Commission has made a lot of progress.

Mr. SELIN. The times you are talking about, although none of us have experienced them personally, they are very much a part of our lore. Quite frankly anytime there is a disagreement among the commissioners, realizing that some agreement is much better than repeating the past is a very important part of what drives us.

Mr. BEVILL. I remember one time the five of them sitting there. I told them that they reminded me of one of my county commissions. The Chairman was in serious condition in the hospital, and so at the next meeting they decided they had better send the Chairman a get well message or something, so the message went to him: “wishing you a speedy recovery,” but they put a P.S. on there, “This resolution passed by a vote of 2–1 and one abstained.”

Mr. SELIN. We had five friendly commissioners when we appeared before you two years ago. We have been fairly friendly regardless of how many we are.

NATIONAL PERFORMANCE REVIEW

Mr. BEVILL. I think it might be well just to keep it at three. I don’t recall, Mr. Chairman, anybody else coming and telling us that they don’t affect the deficit. That is a pretty good thing to say. You keep saying that wherever you go. That is worth bragging about.

Last year, you said that your 1995 budget included a reduction of 75 staff to meet the goals of the Executive Order 12839 and the National Performance Review to downsize and streamline the government.

Are you participating in phase 2 of the administration’s National Performance Review initiative? What gains do you expect to achieve in phase 2 and how are these gains reflected in your 1996 budget?

Mr. SELIN. Well, first of all, we did have a reduction of 75 last year. We have an additional reduction of 33 more positions in our 1996 budget request, and looking at the out years we have an additional 41, 74, and 86 respectively, so we continue the personnel reduction program.

Quite frankly, we are managing the agency the best we can. We are taking the reductions that have come out. It wouldn’t surprise me if the actual timing of the reductions turned out to be a little bit different from that.

We are participating in phase 2 of the NPR, some of the things that the Vice President is asking we started a long time ago. We had, for instance, a major program to reduce the regulatory burden. We have three separate subprograms on the reactor side. We have one program that is looking at our regulations. We have a second program to speed up the ability of individual licensees to get license amendments, which reduce the burden rather than reduce the risk to get these approved by us, and then the third, is we have a set of technical programs, in particular, a standard set of technical specifications.

Technical specifications are the fine tooth in the licenses. They are license conditions. Many of the licenses for historical reasons have too many technical specifications, but the licensees must carry them out. So in order to get away from just onesies and twosies in fixing the license amendments, we have developed a standard set of technical specifications, which licensees can adopt in toto to replace their current technical specifications and it is estimated that that would save over a million dollars per licensee. So we are providing regulatory relief, generic regulatory relief, individual license amendment relief, where the licensee makes the proposal, but we encourage them to come forward, and then technical improvements, which we think will reduce the regulatory burden.

We started this before NPR, but it is useful for us. One other thing I would just say is that we have really been trying to improve our financial and contract management, and a couple of the new acts plus the National Performance Review have given us some vehicles to do this.

We have become an NPR laboratory for procurement which has really simplified our procurement process. We think, not in 1996, but in the future our administrative costs will be reduced considerably by taking advantage of what is going on. The review is not just because the Vice President is admonishing agencies to work harder. He has given us some tools to work with that we didn't have before, and we are grateful for these, and we are really pushing to take advantage of them. Our objective is to reduce our personnel rules 50 percent, similarly with procurement and administration.

NRC RESOURCES

Mr. BEVILL. All right. Last year, you said that $125 million, 23 percent of the agency's fiscal year 1995 budget was to be used to provide administrative support services to the NRC. Have you been able to reduce this amount?

Mr. SELIN. Yes, sir. It is down to $120 million in 1996 dollars compared to $125 in 1995 dollars, so that is a reduction in real terms of about $9 million. We have just done that by squeezing harder. The two things I talked to you about, the reduction in personnel regulations and the procurement laboratory, we think, will allow us in 1997 to make more significant reductions, and they will be not just by squeezing people harder, but by actually running our shop a little more efficiently.

We identified explicitly many things under administrative costs that other agencies leave in their program budgets. It is very hard to say whether 23 percent is the right percentage or not to be in administration, but it does make it easier for you to see these figures and for us to see these and to ride herd on them. That is our intention.

Mr. BEVILL. I understand my five minutes is up. Thank you, Mr. Chairman.

Mr. MYERS. Mr. Knollenberg.

Mr. KNOLLENBERG. Mr. Selin and members of the panel, you have been involved in the private sector prior to coming on board in this capacity. I believe it connects, doesn't it?

Mr. SELIN. Yes, sir.

Mr. KNOLLENBERG. You were——

Mr. SELIN. I spent 18 years in the private sector. When I was offered this job I told the President that I didn't—I had never been in a nuclear power plant. He said that is why I want you to take this job.

Mr. KNOLLENBERG. I was going to ask you why did you take the job.

Mr. SELIN. That is a different question. This is a wonderful job. It is an agency that is large enough to have an impact on important issues and small enough for the management to feel we can really affect it. We don't feel we are just bucking a horse that is going to keep bucking after we are finished. It is a wonderful job.

PRIVATIZATION

Mr. KNOLLENBERG. One of the reasons I chose to talk about your private sector experience is that with that kind of background, that kind of experience, it probably offers you some capacity to look at things maybe differently than a typical bureaucrat might. In regard to that prior experience, in regard to your 20-some years experience in this role, would you comment just briefly on downsizing bureaucracy—and I have asked practically everybody who has come before this committee this question, because what we are looking at is downsizing government.

You have done, it seems to me, on paper what appears to be a very good job of managing the expense side, the growth side of your operation. But in regard to privatizing—in looking at it with your experience in both arenas—do you see the possibility of privatizing any of this operation? If not, indicate what areas of responsibility might, in fact, challenge what the private sector could do.

Mr. SELIN. If you take our administrative budget and put it into the programs it supports, roughly 85 percent of our budget is in support of reactors and the fuel for the reactors and about 15 percent is the materials side.

On the materials side, there are some opportunities because they are obviously small compared to the size of the agency. Two-thirds of the materials licensees in the United States are already in Agreement States. It is not exactly privatizing it, but unlike EPA, we don't delegate to the States. We terminate our regulatory authority when the States pick up the authority in a way that is satisfactory to the Congress.

Mr. KNOLLENBERG. You kind of hand it off?

Mr. SELIN. We hand it off, yes, sir. Your State doesn't happen to be an Agreement State, but 29 of the 50 are. At that point, the Agreement States collect the fees. They finance their programs. They get a lot of help from us, and I think this year they probably would call it help.

Last year, maybe they wouldn't have, but we have improved our relationship with the Agreement States. There is clearly room for expansion in this area, so it is not exactly privatizing, but it is turning programs over to the States and they have the revenue-raising capacity to support these programs.

I think this is a model for Federal-State interaction. On the reactor side, there are two things. One is that more and more of our licensees—almost all the utilities have privatized, but there is a move towards privatizing, for instance, the United States Enrichment Corporation, which is an organization that we regulate today.

I think there will be a move towards privatizing some of the people that we regulate as opposed to our activities. We are doing the best we can, and I think we are doing pretty well in getting into a position to support these as being privatized as opposed to either government-owned corporations or government agencies.

The most important point has to do more with cooperative areas where there are things that we can have the industry do where we audit what they do as opposed to doing an independent set of inspections. For instance, up until recently the Commission has done the recertification of licensed operators for reactor plants where we ran the tests. We examined the operators, then we said look, let the industry do that. They are responsible for manning their staffs, and we will review their programs rather than individually test each operator.

There is an industry organization called the Institute for Nuclear Power Operations, which is less of a lobbying and more of an operational group. We already use their training manuals. We basically say instead of having our own training standards, we look at their training program. We say we think this is quite adequate. Our rule is that you have to meet INPO standards for training. We passed the rule on maintenance, and in order to implement the rule we gave the industry the first chance to draft the manual that says how this rule will be implemented, and we worked with them.

Eventually we found it satisfactory so we adopted their piece. There is a whole set of procedures where instead of our specifying what the procedures are we look at the industry standards and if we say these standards are adequate, then we say if you do meet the industry standards that will satisfy us or you can do it this other way, so we have moved more and more and are trying to intensify this to encourage the industry groups to come up with standards that are satisfactory to us, and then audit the industry program rather than the individual operations.

As far as strict prioritization, for instance, we have a research program which runs about $80 million a year that is entirely conducted under contract.

Mr. KNOLLENBERG. Contract with——

Mr. SELIN. A little more than half goes to the Department of Energy National Laboratories, about a quarter goes to educational and other nonprofit organizations, about a quarter goes to for-profit contractors. We sponsor the only nuclear safety research program that the government sponsors, but we don't conduct the research ourselves. In fact, a quarter of our budget is contracted out.

Mr. KNOLLENBERG. That is your primary responsibility, is it not, security?

Mr. SELIN. Safety.

Mr. KNOLLENBERG. Safety and security?

Mr. SELIN. Yes, sir.

Mr. KNOLLENBERG. You have been there since when?

Mr. SELIN. Four years come July 1st, but who is counting?

NRC RESOURCES

Mr. KNOLLENBERG. In your four years and maybe looking backward, how has the organization grown in terms of personnel?

Mr. SELIN. Our organization is smaller than it was when I came on.

Mr. KNOLLENBERG. What was it like previous to that?

Mr. SELIN. In 1993 we had 3,377 people when we started, and as of the 1996 budget we have 3,185. By the end of 1996, the year that you are working on, it is a cumulative reduction of 192 people.

Mr. KNOLLENBERG. How did you achieve that?

Mr. SELIN. From a narrow technical sense we basically identified positions we could abolish when the people retired, but from a broader sense we went back and said—we have only started doing this—we have a lot of room for improvement, but we went through, and said given what we do today, how can we do it better.

What we are really starting to do now is saying what can we just not do at all. The medical program that I alluded to is an area where we think it is reasonably likely, not certain, but reasonably likely that the commission just doesn't have to be in this area. We are not sure we make a contribution to reducing risk commensurate with the effort. There are other areas—drug testing and security at reactors are examples that we are looking at to say maybe we can just do a lot less than we are doing now without an effect.

Mr. KNOLLENBERG. Are you saying that your personnel costs adjusted for inflation have gone down, then?

Mr. SELIN. Yes, sir. Actually, the personnel costs have gone down a little faster than that because we have reduced—we have a lot of senior people, but we moved them more away from supervision and into technical positions, and the percentage of senior people, people above the 14 level is actually reduced a little bit as we reduce personnel.

We had a 4 to 1 employee to supervisor ratio when we started. We have a 5 to 1 ratio now. We have reorganization plans in the works that by the end of 1999 will get that ratio down to 8 to 1. We think that is more appropriate for an agency like ours.

Mr. KNOLLENBERG. Mr. Selin, I appreciate your responses. I appreciate the panel being here today. I have no further questions, Mr. Chairman, so it is back to you.

Mr. MYERS. Thank you, Joe.

Mr. Fazio.

SITE DECOMMISSIONING

Mr. FAZIO. Thank you, Mr. Chairman. Mr. Chairman and commissioners, nice to see you again. We have had a great deal of continuity, and I think in general the industry and the public has been well served. There is no question in my mind that the commission has been well run, and in my view the fact that you have not been in the middle of controversy in recent years is testament to the fact that we have competent public servants here. And I am particularly pleased that there are the kind of people like those sitting here who have gone back and forth between the private and nonprofit sector and public sector and contributed so effectively.

I would like to talk a little bit about the end of the process. We are going to be seeing more plants going into retirement, and we have more need to focus on cleanup and on decommissioning and things of that sort. I would like to talk a little bit about the NRC requirement that licensees reduce the radioactive contamination on plant sites to an extent that allows those sites to be used for other purposes.

Many of the Members of Congress are getting educated in this area through the many military base closures which produce hazardous or toxic wastes, and I think we have all been aware of the need to convert these facilities into private job-producing sites. But we have some differences of opinion, really, about what is attainable and what is economical, what is affordable.

I am wondering if some sites, particularly those with large inventories of radioactive materials, are really going to be able to achieve the prescribed level of purity, given the resources that are available—and this really leads us both in the direction of technological capability, as well as the resources that may or may not have been made available in advance.

I know EPA has some standards that apply to chemical pollutants that may well be more damaging to public health and safety than some of the radioactivity that may remain on some of the sites that you are responsible for. So would you comment about the risks involved and the possibilities of some sort of realignment—or readjustment if that is appropriate—to match maybe a time line of technological advancement that might cost less.

Mr. SELIN. We would be glad to. First of all, I would like to point out that reactor sites are almost never problem sites. They are relatively easy to clean up because they have been so well run while they had reactors there. Obviously, something has to be done with the fuel and there has to be someplace to send the pressure vessels, so the availability of low level waste sites is critical, but so long as low level waste sites are available, so long as progress is made with the spent fuel, it rarely arises, never to my experience, where there was a really tough question about can we clean up this reactor site or do we have to come up with some complicated set of institutional questions.

Mr. FAZIO. Of course, those are big ifs since we have had real problems with low level waste sites.

Mr. SELIN. I am absolutely confident that the low level waste problem is on its road to solution. Obviously, it is harder to be as confident about the high level waste, but the storage capabilities are so far advanced. We have five examples of reactors that have built dry storage so that even after they close down, they will have a passive system to maintain the fuel.

They are big ifs, but there is time and there is money being spent so that the storage of fuel while the final solutions are worked out is under control. The real problems tend to come up with industrial sites that have been poorly monitored or poorly maintained over time. We have a rule out for comment now that would cover the decommissioning, decontamination of all sites, but it is really focused toward the nonreactor sites.

Just as you suggest, it foresees a situation where it is not feasible or desirable economically to get to the point where the site can, without institutional controls, just be made available, and we do have procedures set up such that off the site, the radiation should be at a reasonable level. There is a second standard that says should the institutional barriers be breached, the total amount of radiation should still be reasonable, not as high as we would accept over the long run, but perfectly acceptable for the short run, and it is foreseen that either the site would be reused or it would be covered by institutional rules.

This is still in rulemaking, there are many comments, and there is a lot of controversy about whether we have chosen the right figure for this. But the concept seems to be pretty solid. I think we have taken steps in the direction that you are suggesting.

Mr. FAZIO. Are you looking at EPA standards as they relate to other kinds of sites that produce potential public health problems?

Mr. SELIN. Well, the answer is we are working very closely with EPA on the radiation side. The costs to remediate the radiation don't seem to be as high as the cost of some of these other toxic materials, so EPA is not as flexible on the radiation side as they are on some of the other materials, but the philosophy is there.

We are doing one other thing, which is a major risk harmonization effort along with EPA to try to take a look at environmental risks from radiation compared to other comparable risks. We are not talking about driving cars and things like that. We are talking about other materials, and to try to get a comparable level of risk from different materials. As you would expect, most of the work is EPA's because they have some overlap and we don't. In that sense we are looking at what they are doing elsewhere, but the main effect, the main attempt is—and we are much further along than they are, and the main attempt is to take these practical management programs and reflect the kind of logic that you are talking about. I think we are doing pretty well there on this draft decommissioning rule.

Mr. FAZIO. I wanted to ask about the issue of adequate assurance that sufficient funds will be available to decommission and to clean up sites. I understand there is the potential that some owners of licenses may lack the necessary resources.

Are we going to find ourselves in a kind of Superfund situation where, as we have seen in the other types of hazardous waste disposal, the private sector will not be in a position to do the job as required by law?

Mr. SELIN. First of all, not under reactors. We have a hole in our regulations for prematurely shut down reactors, but, in fact, I think it is a theoretical hole, that they do have the resources and they have other assets, they have requirements to live with their constituents and their customers, so I don't think it is a problem there. We are fixing our rule.

You have to follow a reasonable set of conditions when you are talking about an industrial site where the people who did the pollution are closed down. The risks to these radiation sites, the health and safety, are almost uniformly much lower than those on the Superfund sites that are being remediated. If we allowed these sites to revert to Superfund, they would never get cleaned up, they are so low on the list. What we do, this is a gross generalization, but it is basically right, is that instead of having a rigid set of standards and just say here is what you have to do and watching the companies go into Chapter 11 or go bankrupt, we encourage them to come up with a plan, which is consistent with the hazards and is consistent with their resources.

We approve the plan and then we monitor against the plan. The plan is based on the standards, but you have to make some judgments, and in many cases we try to involve the local communities because they are the people who are affected by the judgments, but in many cases the question is will you accept somewhat higher levels not of radiation, but of the possibility that somebody will dig into a capped area in the ground in return for getting the place cleaned up and not just sitting there as a subject of litigation.

It is very time-consuming. That is our—we have the SDMP, the site decommissioning management plan. We have about 50 sites on it. We have only decommissioned six sites from this plan which is six more than we had done two years ago. It takes a lot of work to deal with the local communities, but it is a successful program.

Our big problem is not in improving it, it is in institutionalizing it. The local communities have to be involved because we cannot hold the old sites. The licensees are often dead or gone. We can't hold the sites to an arbitrary standard with any hope of carrying it out.

Mr. FAZIO. You have a great deal of flexibility, then, in terms of the time line and the level of cleanup. This is all negotiable based on the capability of the succeeding licensee?

Mr. SELIN. The level of cleanup is fixed, but the amount of risk that one can incur in reaching that we have flexibility on. In other words, we can tell people to take all the stuff off site and dump it someplace. We can tell them to put a cap on it so we assume nobody is going to come and drill a 30-foot hole right into the piece. We have a lot of flexibility in how they achieve a reasonable level of radiation, and we try to match it with the help of the communities to what you can expect the old owners to do because, frankly, if we press them too hard they just walk away and the site will never be remediated.

Mr. FAZIO. You say never be remediated. Does it become a Superfund site at that point?

Mr. SELIN. Yes.

Mr. FAZIO. But, again, as you point out, it is such a low level of concern for Superfund.

Mr. SELIN. We are absolutely certain whatever we do is more than will happen if it becomes a Superfund site.

Mr. FAZIO. You do periodically assure that the licensee has the financial capability to do the job, right? Is there constant checking on this?

Mr. SELIN. Yes, sir, but the problem doesn't arrive when you have active licensees and sites. The problem arises when you have these old sites that have been dormant for 15, 20 years, where they have been sold from one to another.

Mr. FAZIO. Wasn't it the NRC's responsibility all along on those sites?

Mr. SELIN. Yes, sir.

Mr. FAZIO. Did we have a period when we weren't attentive to the problem? Did we let it get away from us?

Mr. SELIN. I don't think people realized just what a problem these were. In some cases these even antedate the NRC. There have been sites inactive for 20 years. We have cleared up many parts of our rules that should have been done a long time ago.

For instance, if licensee A sells a site to licensee B, licensee A, according to the rules could destroy his records. Then when we found something we didn't know if it was handed over or not. We fixed that, but that is not much solace.

Mr. FAZIO. No, and it probably can't be repaired in retrospect. So how many sites remain out there to be attended to?

Mr. SELIN. We have a list that is 50 sites deep, but when we finish those there will be another 50 sites. It is not an infinite list. We are systematically combing the records for sites that have been terminated without what, according to today's standards, are proper exit surveys and we are going back and surveying these. So we have about 200 candidate sites on the list in which roughly 50 get priority attention. I would say 200 sites. These are not the DOE sites. Their list is much longer.

Mr. FAZIO. Right, these are private sites.

Mr. SELIN. These are private. Many of them were contractors.

Mr. FAZIO. Do you have any responsibilities with the DOE sites?

Mr. SELIN. No. There is a connection, though. When we set rules for these sites we know that will be a precedent for those that will be applied to the DOE sites.

Mr. FAZIO. In effect, you are leading them?

Mr. SELIN. Yes, EPA is pulling us both, so the three of us sit down and try to come up with a reasonably consistent set of rules.

Mr. FAZIO. Thank you very much. Mr. Chairman, thank you.

Mr. MYERS. Thank you, Vic.

Mr. Bunn.

Mr. BUNN. Thank you, Mr. Chairman. You mentioned that six sites have been completed. Where did the spent fuel go from those six sites?

Mr. SELIN. No, these were industrial sites, not reactor sites.

HIGH-LEVEL WASTE

Mr. BUNN. So we don't have any reactor sites?

Mr. SELIN. There have been reactors that have been decommissioned, but the fuel is still on the sites. For instance, at Fort Saint Vrain in Colorado the fuel has been removed. What is called an independent spent fuel storage facility has been built.

This is a dry storage facility. The fuel has to stay under water for about five years, but after that it is cool enough to be air cooled, so the fuel will stay in this dry storage until there is a repository, either a temporary repository as the Upton bill or the Johnston bill calls for or a permanent repository and the rest of the plant is decommissioned.

Mr. BUNN. Is it Yucca Mountain?

Mr. SELIN. That is the candidate for the final repository.

Mr. BUNN. That would be a permanent repository?

Mr. SELIN. Yes.

Mr. BUNN. How far away are we from that?

Mr. SELIN. You look like a young man, but I predict you won't be in Congress when this is finished. The bills that are up now have a new concept. I mean not a new concept but a new program, and that is to have a Department of Energy-owned intermediate storage site. It is called the monitored retrievable site, so there would be an intermediate position between indefinite storage at the individual 71 reactor sites and the final disposition at Yucca Mountain, and although the commission hasn't taken a position on many aspects of the bills, we strongly encourage an MRS, a Federal MRS or more than one MRS to be built.

TROJAN NUCLEAR PLANT

Mr. BUNN. You mentioned that there had been kind of a hole in the language for prematurely shut down reactors.

Mr. SELIN. Yes, sir.

Mr. BUNN. Did the Trojan plant in Oregon, do you know, fall under that because it was shut down?

Mr. SELIN. The State provisions on the shut down of the Trojan plant were so extensive that even had we had in place the rules we are working on today we would have done no more than we did.

The safety conditions on shut down are much, much less serious than in operation, so generally you don't have a serious safety problem. What you do have is a safety environmental public interest problem. Our rules require a plan to be prepared and the local citizens to be involved in reviewing that plan.

Our rules are much too complex; they foresaw the plant running for 40 years, so you would have 10 years of advance notice, plenty of time to work out a detailed decommissioning plan for us to review it. So we are working on a rule now under Commissioner Rogers' leadership, which will be much simpler so that prematurely shut down plants could come in with a concept, get the concept approved, manage the details as long as the public had a chance to discuss the concept. Then it occurred to us that if this is good for prematurely shut down plants, why isn't it good for the plants that run the full term, so we are converting this into a rule that will cover all the plants, but Trojan has been through such an exemplary State review that we would not add anything to that.

We looked at the State review and we said that certainly meets any objectives that we might have. That is not true of some other prematurely shut down plants; it is true of Trojan.

Mr. BUNN. It has been interesting to watch over the years as Trojan has had groups trying to shut it down year, after year, after year, and finally the operator decides to shut it down and the groups are saying you are moving too fast now. All right. Thank you.

Mr. MYERS. Thank you, Jim.

Mr. Frelinghuysen?

Mr. FRELINGHUYSEN. No questions.

STANDARD REACTOR DESIGNS

Mr. MYERS. Well, Mr. Chairman, you are to be commended for first holding the line on spending this year on the commission. I commend all of you as members of the commission for holding the line on spending and what you are doing about reform.

For years, we have heard about standardization of design for a light water reactor, and now you tell us by sometime next fiscal year, the one we are working on right now will happen. You have two designs under consideration right now plus the Canadian plan, or the Canadian system.

Mr. SELIN. The Canadians just came in a week ago and said they are going to slow down quite a bit.

Mr. MYERS. Finally, next year we will have a shelf reactor that people can buy. Two of them, Westinghouse being one and General Electric the other.

Mr. SELIN. Combustion Engineering being one. Westinghouse has a design that they developed in England, but they haven't submitted to us.

Mr. MYERS. I thought they had.

Mr. SELIN. They have a small reactor, so-called passive reactor. That is earlier in the development, but that is yet a third design. In addition to the two, you cited there is a Westinghouse design, a very attractive design called the AP600, but they waited for these two evolutionary designs to be done before they pushed their application, so it is next in the pipeline.

Mr. MYERS. But next year, then, there will be two reactors.

Mr. SELIN. Boiling water design and pressurized water design.

Mr. MYERS. The utility can say with some confidence if we order that reactor, we can build it on site someplace and get it licensed?

Mr. SELIN. Yes, sir.

Mr. MYERS. Hopefully, that will loosen up the industry a little bit where they feel like they have been constrained somewhat. The utilities privately will tell us, boy, we would like to get into it. We just don't dare do it.

Mr. SELIN. They won't have regulatory reasons for not going ahead at that point.

NUCLEAR MEDICINE

Mr. MYERS. Okay. Well, we will wait and see. I have two or three other questions here. I am pleased to see that you are going to get out of the nuclear medicine field; is that right?

Mr. SELIN. That is premature. The commission, the individual commissioners have looked at this and we have raised very serious questions about why are we regulating, not the materials, but the interactions with the patients, the record keeping, et cetera, for the therapeutic use of nuclear materials when that is about 20 to 25 percent of the radiation therapeutic procedures in the country.

If you go to Georgetown Hospital, one room has a cobalt device which we regulate because that is Atomic Energy Act material, and right next to it is a linear accelerator which to a first degree of approximation produces the same kind of radiation which we have nothing to do with because it is electronically produced.

It occurs to us that maybe the States who are regulating the second device could also regulate the first device other than the care and feeding of the nuclear materials themselves. We have a National Academy of Science study that is taking a look at that. We hope to be informed of their progress soon. We are certainly leaning towards coming up with a procedure for turning this back to the States.

Mr. MYERS. How did you happen to assume the responsibility for the cobalt operation and not the reactor?

Is that statutory?

Mr. SELIN. Well, that we don't have responsibility for the linear accelerators is statutory.

Mr. MYERS. But you did take the cobalt.

Mr. SELIN. The cobalt, it is 20 years of history with the statute. I mean, we are supposed to be regulating the peaceful uses of atomic energy, and over time that has grown to include things that I personally think go beyond what needs Federal regulation.

If we were starting today we probably could interpret the statute the way I described, but with 20 years of case law and what we have been doing, it probably would be highly desirable that were we to change this rule that there be statutory changes.

Mr. MYERS. There would have to be statutory reform?

Mr. SELIN. Yes, sir.

Mr. MYERS. I have talked to you before about this. I have been observing two things: first, the diagnostic materials that are just not available in the United States anymore. I am told that they are overregulated and that they have been driven out of the United States from production. Second, radionuclide materials—no one is producing these materials. I understand that maybe a reactor or two may be going on line now that will produce some of those materials, but they have just been literally driven out of the country.

Mr. SELIN. With all due respect, I think that the regulation has almost nothing to do with it. It is very expensive to operate a reactor to produce isotopes, so everybody who is producing isotopes is either doing this as part of what they do in a research reactor, where the overall costs are being supported by research or they are doing it on very, very, very tight financial guidelines. I really don't accept the argument that it is regulation that has driven it out of the country, but the economics are very, very tight on the production of isotopes.

I would be delighted to see these produced in the United States, but the reason they are not produced is the unavailability of a reactor at economic terms, not anything that we are doing.

Mr. MYERS. Well, why is it that some other country can produce these materials and we can't in this country? I suppose we are a bigger consumer—I am quite sure we are—than any other Nation in the world. Why is it some other country can produce them and we can't?

Mr. SELIN. I think that is a question you should ask the DOE witnesses.

Mr. MYERS. We have. They say it is because of too many regulations.

Mr. SELIN. DOE has a crazy quilt patch of regulations for their own——

Mr. MYERS. We are going to look at a lot of those, too.

Mr. SELIN. Many DOE facilities—in fact, the Secretary of Energy has entertained a concept that maybe those facilities should be NRC-regulated not because we would be easier, but because our regulations tend to be more explicit. They start with basic principles and come up to the point.

DOE's regulations are generally more generic. They cover a much more heterogeneous set of facilities, so it is hard to figure out how they apply to a particular site or a particular reactor. I might have overspoke. If the implication is that it is NRC regulations that have driven isotope production off shore, I don't think that is true.

Ms. DE PLANQUE. Another point to consider, I think, at least in some of the other countries, these are State-supported activities or government-supported activities, not necessarily private.

Mr. MYERS. Aren't our reactors government-supported, too? Every one of them except some commercial reactors, the research reactors are.

Ms. DE PLANQUE. Yes, but in this case if you are talking about a commercial facility, then I think the Chairman is right about the economics.

NUCLEAR INDUSTRY STUDY

Mr. MYERS. Okay, I think I see what you are saying. I have complimented you, now I am going to be somewhat critical.

Last fall in October, the Nuclear Energy Institute had a publication that said while our reactors are the safest in the world, the costs to the consumer are continuing to go up because of you folks. It has been quite some time since I saw the report, but as I recall, it cited unnecessary reporting, unnecessary rules and regulations that do not correspond to improved safety. I think you remember the study.

Mr. SELIN. I seem to recall it.

Mr. MYERS. I thought you probably would. What would be your response to that? We will give you equal time.

Mr. SELIN. We don't need equal time. Since that report came out, I consider the report quite unfortunate, but since that report has come out, we have had a very productive set of discussions with the Nuclear Energy Institute on what is really bothering them.

I read the report the following way. There were a lot of statements, the statements properly should have said utility executives or many utility executives believe X, Y and Z because they really did no analysis of objective facts. They interviewed the executives, and then they reported what they thought, but I read that report even if I didn't agree with a lot of the specific statements as being a real cry of pain from a lot of executives who were trying to operate in a very difficult economic environment about what they perceived problems the NRC was causing them.

I was quite surprised. I thought we had much better communication with these executives than came out. I have seen the CEO of just about every one of the utilities in the country, maybe every one of them that operates power plants. None of them has ever taken—that is not true, with two exceptions none of them has ever taken the opportunity to tell me things like that, and when I saw that report, my reaction to our staff was we have a lot of work to do to communicate better with the people we regulate to get much franker communications from them about what is bothering them.

If they have to well up their feelings for four years and then have it burst in an explosion like that, there is some real communication problems. They did a lot of detailed cases, and we have gone into these detailed cases to see what we can learn from them. We haven't spent a lot of time on the broad findings because I really don't think they are supported even by the interviews, but we have spent a lot of time saying what is really bothering you folks, and they have been much more objective and much more concrete in the discussions since that report, and I think that the dialogue that the report—I read that report as a two-by-four to catch our attention, and now that they have our attention, the dialogue will produce some quite useful improvements in what is going on.

At the same time, five years ago when these folks weren't facing the kind of competitive picture they are facing now, they wouldn't have been moved to say these things. Many of those remarks are really not aimed at us. They are aimed at an environment that is different from the one that they saw when they invested in those plants in the first place, but they have problems. They see us as part of the problem.

Whether they have done a good job of articulating exactly what we have done and how we have done it is sort of irrelevant. We need to talk to them and help them express what is really bothering them so we can work on that. I think we have quite a productive process under way to do that.

Mr. MYERS. Well, if you are placing regulations on them, though, that are causing an extra burden unnecessarily, if their reporting is——

Mr. SELIN. We are uniformly reducing our regulations.

Mr. MYERS. That is the way I read it, that you were doing things that were not productive in making the plant safer.

Mr. SELIN. There are still some things we do that don't make sense, I agree to that. In fact, two years ago in talking to the board of directors of the predecessor organization, I said come in to us and tell us what we can do, and every recommendation they have made we have followed up on. They have become much more productive since that report.

I think they were maybe a little embarrassed by the report themselves and felt obligated to be a little more analytical and a little less emotional, and we were embarrassed also to say, you know, we thought we understood what these folks thought, and they had to write something like that. We were not communicating the way we should be communicating. The exact language I disagree with enormously, but the fact that there is something there that causes that language is a serious problem for us to address, and we are addressing that as energetically and as cooperatively as possible. We have not only the utilities, but the environmental groups who are involved in this discussion as well, and we certainly have——

Mr. MYERS. You are in the middle between the two of them?

Mr. SELIN. No, it is more like a triangle. Sometimes we agree with one, sometimes we agree with the other, sometimes they both disagree with us. We have really stepped up the communication and the follow-up on programs to try to get at the burr that is under the saddle because there is clearly a big burr under the saddle.

REGULATORY REFORM

Mr. MYERS. Congress clearly has heard from the American people that they are tired of unnecessary regulations placed upon them by some bureaucrat someplace who wouldn't know which end of a cow to milk, but yet they are being told how to do it by somebody. You are aware of the regulatory reform that Congress has already embarked upon. Does last week's action affect your regulations or your rulemaking in any way?

Mr. SELIN. Yes. First of all, I would like to stress that the three programs I talked about we started two or three years ago. We didn't wait for the October elections or the NEI report to say we can do better than we are doing now. The regulation, the bills that have come before the Congress, I personally support them, but I think that the NRC, which is a very small part of the regulatory environment, would be affected in a way that is quite perverse to the intentions of the writers. I will just make two points. I could make a number.

The first point is in a 100 percent fee recovery agency, if the costs of writing a rule is increased, the licensees are going to bear that cost, so instead of reducing the cost to us, they are going to increase the cost to them if we have to go through extra steps to write the regulation, and the second point which I think is more important is that almost every regulation that we are doing in the reactor side is either a reduction in regulatory burden or something that has got some pros and some cons, some reductions and some increases.

The places where this is not true, particularly a rule that we are working on for the risk of a reactor when it is shut down for maintenance, the industry recognizes there is a problem. They recognize that a rule is needed, and we are discussing quite productively what the rule will be, so the perverse effect is that we won't be sued by the right, by the industry, we are going to be sued by the environmentalists as we try to put out these rules to reduce the regulatory burden. That is okay, but I don't think that is what the authors had in mind when they said you have to do all these analyses or you have to have a moratorium to reduce the burden.

Our regulations are not so clean. They might have four sections, three of which reduce burden and one of which increases it a little bit, but less than the other three reduce it, so there will be a real question of whether we have done risk analysis or whether this regulation is subject to the moratorium or not. It is going to slow us down. We will survive. We will do what the Congress wants us to do, but it will slow us down in ways that I think you didn't intend or the Congress didn't intend.

Mr. FAZIO. John, would you yield on this point?

Mr. MYERS. Sure.

Mr. FAZIO. I have said so often that people are generally in favor and specifically opposed.

Mr. SELIN. Right. I think what you are doing with EPA and OSHA are terrific, but when it comes to the NRC——

Mr. MYERS. It depends on whose ox is being gored. Because of the possibility of being sued by environmental groups, I may change my position on loser pays. I wasn't going to support it, maybe I will. I will have to take a new look at that. Do you have anything?

Mr. KNOLLENBERG. No additional questions.

Mr. MYERS. Thank you very much once again, members of the commission, for once again your fine testimony here. I do congratulate you for the fine job you are doing and what you are going to do on standardization of reactor design. And licensing, too, as well as simplifying the burden that you are placing on the industry. It is ultimately passed on to the consumer. Keep up the good work now. We are anxiously waiting for your report next year.

Thank you for your testimony. All of us will have some questions we will provide for the record. Thank you very much.

[Questions and answers for the record, biographies and prepared statements of the witnesses, and Nuclear Regulatory Commission budget justifications for FY 1996 follow:]

NRC RESOURCES

MR. MYERS: By reference to various indicators, the NRC budget estimates demonstrate that the safety performance of the nuclear industry is steadily improving. NRC acknowledges that it is not possible to isolate a causal relationship or a specific set of factors to directly link NRC oversight to licensee performance. The agency, however, cites the industry trends to reinforce the notion that NRC is accomplishing its mission of protecting the public health and safety. What would be the decrease in safety, if any, if the agency's appropriation were decreased by 10, or 20, or 30 percent?

CHAIRMAN SELIN:

The NRC has taken a number of steps over the past few years that are clearly in line with the Administration's and Congress' objectives to improve efficiency by reducing unnecessary regulatory burden and improving NRC's internal processes. These improvements relate to reactor regulations, nuclear material regulations, and management of the NRC. Because of these improvements, our fiscal year 1996 budget request is essentially held at the FY 1995 level, and is 3 percent less than inflation would justify.

The NRC is currently evaluating actions that could be taken to further streamline agency operations. The results of our evaluations will be reflected in our future budget requests. Although the Commission expects to achieve further increases in efficiency, it is not realistic to assume that such future efficiencies would permit the drastic reductions hypothesized in your question. While we cannot quantify the decrease in safety which would result from such reductions, they would certainly have an adverse impact on our ability to ensure the public health and safety. The NRC continues to meet the requirement of the Omnibus Budget Reconciliation Act of 1990 to recover approximately 100 percent of the agency's new budget authority, less the amount appropriated from the Nuclear Waste Fund. As a result, the NRC is not a net contributor to the deficit.

MR. MYERS: NRC's Report on Budget Execution for the period ending December 31, 1994, indicates that the agency had an unobligated balance of $63.6 million and that deobligations for the remainder of the year would be $8 million. Why did the agency have such a large unobligated balance? At what level does the agency need to maintain its unobligated balance to have a sufficient cushion against unanticipated demands? How does the NRC plan to reduce the high level of unobligated funds?

CHAIRMAN SELIN:

Over the past several years, NRC has increased management emphasis on and attention to financial management. In particular, we have focused on reducing prior year unliquidated obligations knowing that this would result in a temporary increase to our unobligated carryover. We are also providing closer scrutiny of the need for planned projects, and more expeditious closeout of completed contracts. In addition to our appropriated budget authority, we have been increasingly involved in providing international assistance through reimbursable work agreements, primarily associated with reactor safety assistance to the former Soviet Union through U.S. AID. About $13 million of the unobligated balance is associated with this reimbursable work.

We have taken deliberate steps to reduce the unobligated balance in an orderly manner. For example, the NRC voluntarily submitted a $12.7 million rescission in FY 1994 and a proposed $20 million amendment to reduce our FY 1995 budget request. The NRC requested Congress to reduce its FY 1995 budget by $20 million with the understanding that we would use our unobligated balance to fund program needs which would otherwise have been funded from FY 1995 appropriated funds. The NRC also considered the unobligated balance in developing our FY 1996 budget request which has been held to our FY 1995 appropriated level.

We believe that an unobligated balance of 3 to 5 percent of our budget is sufficient to provide for unanticipated demands under normal circumstances. Given our current financial status and plans, we expect to reach this level by the end of FY 1996. NRC will continue to emphasize strong financial management and will monitor the unobligated balances to determine if further steps are necessary.

MR. MYERS: NRC's unaudited financial statements for FY 1994 show that the agency had $151.2 million in undelivered orders. Does NRC consider this amount to be excessive? If so, what plans does the agency have to reduce this amount in the future?

CHAIRMAN SELIN:

As noted previously, NRC's increased emphasis on sound financial management has focused on reducing prior year unliquidated obligations. This has resulted in a 10 percent reduction in undelivered orders from FY 1993 yearend to FY 1994 yearend. We expect a similar reduction to occur during FY 1995. Currently the undelivered orders are about 30 percent of our appropriated budget. We believe further modest reductions are warranted and will continue to take prudent steps to accomplish such reductions.

MR. MYERS: NRC estimates that its FTEs will only decrease from 3,293 in FY 1994 to 3,144 in FY 1997. Why does the agency need to maintain such a high level of staff when no new plants are being constructed, there appears to be a lessened need for research and regulation development to confirm safety margins, and performance indicators demonstrate that nuclear plants are operating more safely?

CHAIRMAN SELIN:

The FTE reductions are consistent with the Federal Workforce Restructuring Act of 1994 which required a reduction of 272,900 positions in the Federal Government by the end of FY 1999. Of the 149 FTEs reduced between FY 1994 and FY 1997, 123 FTEs (or 83 percent of the reduction) were associated with the reactor program. While these reductions to the reactor program were appropriate, the fundamental mission of oversight of 109 operating nuclear power plants has not changed. In addition to providing safety oversight of operating reactors and other NRC-licensed activities, we are investing resources in programs which affect the future -- streamlining the regulatory process, renewing reactor licenses, regulating standard reactor designs, and managing waste disposal.

A further reduction of 160 FTEs is planned between FY 1997 and FY 1999. An appropriate portion of this reduction will be associated with the reactor program.

MR. MYERS: The NRC requests budgets for 1,581 FTEs in FY 96 for "Reactor Regulation." With one and sometimes two resident inspectors physically located at the 109 operating units, why are so many other FTEs needed to regulate the plants?

CHAIRMAN SELIN:

The Reactor Regulation Cost Center is a much broader array of technical and policy expertise than just the on-site reactor inspections. The cost center is comprised of ten discrete activities. The component activities include reactor inspection; reactor oversight; reactor and site licensing; reactor aging and renewal; reactor safety assessment and regulation development; independent analysis of operational experience; technical training and qualification; investigations, enforcement and legal advice; independent review; and general support.

FTEs for this Cost Center are divided almost equally between the regions (45%) and headquarters (55%), and are engaged in wide-ranging inspection and non-inspection activities. These activities help ensure that plants are designed, constructed, and operated safely; prepare the regulatory basis for future licensing activities, including the renewal of existing licenses; establish a sound technical basis and regulatory framework for reactor licensing activities; ensure that the safety-related plant systems and components perform their required function and maintain their integrity and operability over the life of the plant; evaluate safety concerns involving reactor facilities; assess reactor operational events and experience; conduct reactor technical training for NRC staff; provide technical advice to the Commission on reactor safety issues; conduct reactor licensing proceedings; investigate alleged wrongdoing by NRC reactor licensees; and pursue reactor enforcement policy and actions to protect the public health and safety.

Regional FTEs are primarily divided into two components: resident inspectors and region-based specialists. Resident inspectors are stationed at plant sites and focus on day-to-day operational activities, event follow-up evaluations, licensee management effectiveness and operating staff performance. Resident inspectors are "the eyes and ears" of the Commission at the sites; in a defense-in-depth approach to reactor regulation, they are the first line of defense. Resident inspectors carry out the major share of the core inspection program and participate in other inspection activities. The assignment of resident inspectors to operating sites is in accordance with the Commission's "N+1" policy (the number of reactor units at the site plus one); exemptions to this policy are based on evaluations of performance.

Region-based specialists operate out of the four regional offices and serve to supplement the expertise of the resident inspectors; because of their dispersed location and detailed familiarity with the plants in their regions, these specialists can provide rapid analyses of events and are available to be quickly deployed to the plant sites. Region-based specialists participate in-depth technical inspections, the follow-up of allegations, systematic analysis of licensee performance (SALP), and the operator licensing program.

Because of their perspective, headquarters technical specialists are able to serve a quality assurance role that promotes an evenness in regulatory responses across the regions and a policy development function. They have primary responsibility for licensing actions, reviews of topical reports, the development and review of technical specifications, reactor performance evaluations, rulemaking, and the development of the criteria and processes for license renewal. Headquarters specialists have played a key role in formulating improvements to the regulatory basis for operating reactors. These improvements have been most notable in a movement to reduce unnecessary regulatory burden through the Marginal To Safety Program, the Regulatory Review Group, and the Cost Beneficial Licensing Actions (CBLA) Program. With respect to the aging of reactors, the staff has had to deal with difficult technical issues as exemplified by current steam generator and core shroud problems.

Resources for the Independent Analysis of Operational Experience, and Technical Training and Qualification Activities are utilized for the collection, analysis, and dissemination of operational safety data from NRC licensees and foreign sources and to perform trends and patterns analysis of plant performance utilizing agency and industry data bases involving probabilistic risk assessment results and methods. Generic and recurring problems are analyzed to understand their causes and to identify possible corrective actions. The intent is to address problems which may in and of themselves be relatively minor but could be precursors to significant safety problems if not corrected. Resources are provided to develop and present technical training in direct support of the reactor program. Further, resources are included for the maintenance and implementation of the NRC incident response program involving staffing of the NRC Operations Center 24 hrs/day and training for agency response activities.

MR. MYERS: Executive Order 12837, dated February 10, 1993, states that all executive agencies are to include a separate category for administrative expenses and that for fiscal year 1996, all agencies shall submit budget requests that reflect no less than a 9% reduction in administrative expenses from the amount made available for fiscal year 1993, adjusted for inflation. How has NRC defined "administrative expenses"? What was the amount made available to NRC for administrative expenses in FY 93? Please provide for the record the comparable amounts for FY 94-96.

CHAIRMAN SELIN:

The NRC defines administrative programs as all salaries and benefits, administrative support, including rent, and travel for the Offices of Information Resource Management (IRM), Administration (ADM), and Personnel (OP); all administrative support for the Regions and the Technical Training Center (TTC); and all agency change-of-station and employee relocation. This definition of administrative programs is consistent with the information that has been provided in response to your questions each year since 1993.

The amount budgeted for administrative programs for FY 1996 reflects a 7 percent reduction in administrative expenses, adjusted for inflation. The budget for administrative programs, adjusted for inflation, was $128.8M in FY 1993, $129.4M in FY 1994, $129.2M in FY 1995, and $119.8M in FY 1996.

It is important to note that in calculating an FY 1993 base from which agencies would calculate administrative expense reductions, OMB excluded the cost of rent. Rent increases, as set by GSA have exceeded inflation each year from 1993 to 1996. When the cost of rent is excluded from NRC's definition of administrative programs the amount budgeted in FY 1996 reflects a 9 percent reduction in administrative expenses from that budgeted in FY 1993, adjusted for inflation.

MR. MYERS: The 5-year budget program of the NRC projects declining agency budgets through the year 2000. Because of a significant reduction in budgeted contract support, the budget request for the reactor program is somewhat lower than the amount appropriated in FY 95. Yet for other programs -- and for cost center after cost center -- the agency requests an increase in FY 96 as a prelude to projected decreases in FY 97. Why isn't NRC prepared to begin agency-wide downsizing in FY 96, rather than waiting until FY 97?

CHAIRMAN SELIN:

The NRC has already begun downsizing. The FY 1996 NRC budget request represents a 3 percent reduction in real dollars from our FY 1995 baseline after inflation is considered. We have reduced our administrative expenses, as well as our programmatic FTEs and dollars, to mitigate the affect of inflation on our programs and in response to initiatives to reduce the size of the Federal Government. We are concerned about projected reductions in the outyears through the year 2000, since the NRC has not assessed the impact on public health and safety programs. Although we will make every effort to explore options from meeting the percent goals established, these reductions should not be based on deficit reduction goals. The NRC because of 100 percent fee recovery requirement, does not contribute to the Federal deficit. NRC's budget should be based on program merit, not on arbitrary deficit reduction goals.

Our FY 1997 budget estimate is about $16 million less than the FY 1996 request and is consistent with the President's Budget. As noted on page 2 of our budget request, this 3 percent reduction has been applied equally to all programs. The application of this across-the-board reduction to each of our programs has resulted in the appearance, for a number of the cost centers, of an increase in FY 1996 as a prelude to FY 1997 decreases. The agency will conduct a further review of the allocation of this reduction and any redistribution among programs will be provided with the FY 1997 budget request.

MR. MYERS: The agency recognizes that cost-effectiveness is promoted when excess funds are deobligated as soon as practical after project completion. Please provide the Subcommittee with a record of significant funding deobligations for the past two fiscal years.

CHAIRMAN SELIN:

As part of NRC's effort to improve financial management, we have made steady progress in deobligating funds not needed for program work. During FY 1995, we deobligated about $12.5 million and during FY 1994, about $13.5 million.

MR. MYERS: Last year you told this Subcommittee that indirect administrative costs attributed to waste-related activities performed by the NRC, including such things as office space, telephones, training, supplies, and computers are not charged to the Nuclear Waste Fund budget request of $22 million. You told us that you budget these activities in the Nuclear Safety Management and Support program "to facilitate a more direct correlation between budget formulation and budget execution."

a. Please explain why you do not believe administrative costs which have a direct correlation with high-level waste activities are not included in that appropriation.

b. Would you be willing to change your accounting procedures to incorporate those administrative costs in your appropriation request? If not, why not?

CHAIRMAN SELIN:

Prior to FY 1993, NRC allocated total agency administrative support funding to the programs which comprised the Salaries and Expenses appropriation at that time. To facilitate a more direct correlation between budget formulation and budget execution, NRC changed its methodology for allocating administrative support funding. Since FY 1993 and consistent with discussions with this committee at that time, NRC began allocating its administrative support funds to the program within the Salaries and Expenses appropriation which provides the administrative support services required by the agency.

The FY 1996 budget request of $22 million for the High-Level Waste cost center, which is funded from the Nuclear Waste Fund, does not include administrative support funding. The administrative support funding was budgeted in the Management and Support program.

The NRC could include the administrative support costs for the High-Level Waste cost center within that cost center. However, to do so would hinder a direct correlation between budget formulation and budget execution, and would complicate the process of accounting for administrative costs.

NUCLEAR REGULATION

MR. MYERS: Now that the nuclear industry has matured, wouldn't it be reasonable for the NRC to scale back its activities and measure the resulting trends to better compare the impacts that the agency -- as opposed to the industry -- is having on the protection of public health and safety?

CHAIRMAN SELIN:

Over the past five years NRC has continued to take action to monitor and measure the impacts that it is having on the protection of the public health and safety, and has several initiatives underway to improve the regulatory process in response to this information.

Specifically, in 1989, the NRC invited the industry's constructive criticism with the initiation of the Regulatory Impact Survey. As a result of this initiative, the NRC implemented a number of changes to practices which reduced the regulatory burden on utilities. In 1992, the NRC requested and received public comments aimed at reducing the burden of government regulation, and tasked its Committee to Review Generic Requirements with reviewing existing regulations. One regulatory burden reduction resulting from this effort was a change to the regulations to decrease the required frequency of periodic reporting of operational data, including radiological effluent reports.

In May 1994, the Commission established its "Continuing Program for Regulatory Improvement." The Continuing Program for Regulatory Improvement consists of three NRC initiatives to reduce unnecessary regulatory burden: The Marginal to Safety Program, the Regulatory Review Group (RRG) Implementation Plan and the Cost Beneficial Licensing Actions (CBLA) Program. The Marginal to Safety Program is the agency's continuing effort to eliminate or modify regulations that are marginal to safety and impose a substantial regulatory burden on licensees. Petitions for rule changes that reduce unnecessary regulatory burden may be processed on an expedited basis if a complete regulatory analysis is provided. The RRG effort was a review, conducted by senior-level NRC staff, which identified 71 areas with significant potential for relief of burden with little or no adverse safety impact, of which approximately 30 have been implemented to date. The CBLA program makes available to licensees higher review priority for licensing actions that reduce or eliminate requirements that have an incrementally small effect on safety but a heavy economic burden. As of December 29, 1994, licensees submitted 144 CBLAs to the staff. Of these 144 submittals, 83 have been approved thus far, for a cost savings (based on licensees' estimates) of over $407 million.

In addition to the Continuing Program for Regulatory Improvement, the NRC staff is also effecting regulatory burden reduction with implementation of the Technical Specification Improvement Program and the Line Item Improvement Process. To date, approximately 40 licensees are considering converting to the improved Technical Specifications. The Line Item Improvement Process allows licensees, on a voluntary basis, to request relocation of specific license requirements to licensee controlled documents. Staff approval of specific "line item improvements" is based on a generic staff evaluation, thereby enhancing staff efficiency.

The NRC continues to restructure the NRC inspection program to allow reduction in inspection activities for good performers. Good performers receive an extended 24-month SALP evaluation cycle and resident and regional inspection activities are reduced.

MR. MYERS: Has the agency performed an evaluation to determine which of its programs, regulations and activities offer the greatest return to the public in terms of improved safety margins? Which NRC activities have, over the years, proven to be the most cost-effective in improving safety margins? How does NRC measure improvements to safety margins?

CHAIRMAN SELIN:

We have made it a practice to periodically review our programs, activities and regulations to assess how they contribute to safety and how they can be improved. The NRC's regulatory program consists of different activities, each of which contribute in a unique but important way to safety. These activities include inspection, licensing, review of operating experience, analysis of safety issues, research, regulations, enforcement and various supporting programs. It is the combination of these activities, rather than any one activity that provides assurance of adequate safety margins. The resources and program focus of each activity are periodically assessed in light of the safety performance of the licensees and the perceived contribution the activity makes to safety. For example, in gross terms our inspection program probably produces the greatest return to safety; however, we believe we can actually reduce inspection resources while improving the inspection program by refocusing on problem issues and plants and reducing inspection on good performers. As another example, we are undergoing a major reassessment of our enforcement program to better understand its contribution to safety and how it can be improved.

We measure improvements to safety in a variety of quantitative and qualitative ways. Performance indicators have been established to measure trends in such areas as safety system failures, safety system actuations and significant events. Qualitatively, our senior managers meet semi-annually to assess licensee performance, particularly where the trend is down. It is a much more difficult and subjective process to determine the nexus between NRC activities and these safety trends. Our general pattern has been to increase attention to plants and issues where there are problems and reduce attention when trends are up. Experience has shown that increased attention has resulted in reversing negative safety trends.

The NRC has recognized for several years that there is room for improvement in our performance and we have launched initiatives that can reduce the cost of regulation while maintaining public health and safety. We have conducted self-assessments as well as encouraged active participation by the public and industry as we pursue regulatory reform. These efforts have produced real savings to our licensees and are continuing.

MR. MYERS: The Subcommittee understands that NRC reviews the safety of nuclear power plants before they go into operation and then issues a license for the plant to operate. By issuing the license, NRC confirms that the plant is safe to operate. Beyond assuring that a plant remains as safe as when licensed, what is the necessity for continued regulatory oversight?

CHAIRMAN SELIN:

The continued regulatory oversight of power reactor licensees by the NRC is focused on ensuring that the plants are maintained and operated safely after licensing. This oversight includes inspections to ensure the plant is operated safely and equipment and systems are properly maintained. Operating experience is monitored to detect trends and patterns indicating problems. Lessons learned from operating experience are communicated to the regulated community to improve safe operations. Amendments to the original license are also reviewed to provide assurance that the current licensing basis of each nuclear power plant provides an acceptable level of safety.

Finally, we would note that nuclear power reactors are complex machines with numerous potential failure paths which can lead to core damage, as demonstrated through the probabilistic risk assessments which have been prepared for each plant. Safe operation is the responsibility of the operating utility but experience has shown the need for a strong program of day-to-day operational oversight by NRC's resident and regional inspectors. The need for such oversight was clearly demonstrated by the TMI and Chernobyl accidents.

MR. MYERS: If NRC requires plant changes to improve safety, what criteria are used to justify the costs involved to make the changes?

CHAIRMAN SELIN:

The Commission's regulations allow new requirements (backfitting) to be imposed on a facility only when it determines, based on analysis, that there is a substantial increase in the overall protection of the public health and safety or the common defense and security to be derived from the backfit and that the direct and indirect costs of implementation for that facility are justified in view of this increased protection. The regulations call for a regulatory analysis which addresses:

(1) the potential change in risk to the public from the accidental off-site release of radioactive material, (2) the potential impact of radiological exposure of facility employees, (3) installation costs, and (4) continuing costs, and resource burdens.

Backfitting analyses are done according to Regulatory Analysis Guidelines which have been established to support the Commission's Safety Goals. The regulatory analyses address both quantitative and qualitative costs and benefits. Where cost and risk changes can be quantified, they are assessed relative to the standard of $1000 per person REM averted. This standard is currently under internal NRC review to determine if it should be revised based on experience, inflation, and other factors.

There are only two exceptions to the cost/benefit justification in the backfit rule. One ensures that plants are brought back into compliance when they are found to be outside the current NRC regulations and licensing basis, referred to as "compliance backfits". The second exception relates to cases in which the staff or the Commission determines that a change is needed "to ensure that the facility provides adequate protection to the health and safety of the public and is in accordance with the common defense and security."

The Commission has established procedures and practices for implementation of the backfit rule which include: reviews by the Committee for Review of Generic Requirements; reviews by the Advisory Committee on Reactor Safeguards (an independent group); a public comment period; and, for some cases such as new regulations, a review by the Commission.

MR. MYERS: What is the rationale for pursuing an aggressive safety improvement program in the absence of an identified safety deficiency?

CHAIRMAN SELIN:

The NRC does not pursue safety improvements in the absence of an identified safety concern. However, the NRC has an active program for plant inspections and for the review of operating experience to assure a continuing level of safety. The NRC pursues those issues that constitute safety concerns and evaluates new requirements to identify those which provide substantial, cost beneficial improvements.

MR. MYERS: The NRC has developed numerical safety goals setting forth the degree of risk that the agency is willing to accept from its licensees. How large is the margin between the safety of license plants and the NRC safety goals? Is it fair to conclude that the agency is requiring safety greater than its own safety goals? If so, how is that justified?

CHAIRMAN SELIN:

We believe that at most plants we are close to the level of safety envisaged by the safety goal. Our Individual Plant Examination Program does provide insight about risks at nuclear power plants. Also, we compared five plants with the Safety Goals and concluded the safety goals were met. While these reviews indicate that the safety goal may be met or exceeded, current risk analyses have limitations. Operational practices are not well modeled in risk analyses and operational events have shown that risks may have been higher than risk analyses indicate.

Under current guidelines we do not believe we are imposing new safety requirements which exceed the level established by the safety goals.

The NRC has recently instituted measures that will help ensure that it does not require safety greater than its safety goals. The Regulatory Analysis Guidelines of the U. S. Nuclear Regulatory Commission, have recently been revised to require safety goal considerations in the regulatory decisionmaking process for proposed new safety requirements. This safety goal evaluation is designed to answer the question as to when a regulatory requirement should not be imposed on a generic basis because the residual risk is already acceptably low. The intent is to serve as an initial screen that would eliminate some proposed requirements from further consideration independently of whether they could be justified on a cost-benefit basis.

We also have developed an initiative to modify our rules to encourage the industry to petition for rule changes when individual rules impose an undue burden on the regulated industry without a commensurate safety impact.

NUCLEAR INDUSTRY STUDY

MR. MYERS: A study published for the Nuclear Energy Institute in October, 1994 concluded that:

> While U.S. nuclear power plants are very safe, recent NRC actions have added little improvement to the safety margin, and have added significantly to consumer costs for electricity. There are strong indications that some NRC activities may actually reduce the safety margin... NRC's current regulatory approach represents a serious threat to America's nuclear energy generating capability... Left uncorrected, these regulatory practices will inevitably result in steadily increasing operating costs at U.S. nuclear power plants. These increased costs will not accrue a commensurate benefit because the regulatory practices in question do not increase the safety margin.
>
> Do you care to comment on these conclusions?

CHAIRMAN SELIN:

The Commission welcomes constructive feedback on NRC's regulatory programs from the industry. While we did not agree with all of the conclusions in the report, it served as a vehicle for dialogue with the industry. The Commissioners met with the Nuclear Energy Institute (NEI) and a representative from Towers Perrin at a public meeting on December 21, 1994, to better understand the process used by Towers Perrin to reach the conclusions stated in the report. At this public meeting, the Towers Perrin representatives stated that his firm had performed no independent analysis to reach conclusions in the report, but felt it had accurately communicated the opinions and perceptions of the nuclear industry.

The NRC staff initiated an evaluation of the Towers Perrin report to determine what actions, if any, were appropriate to address industry's concerns.

The report confirmed that changes already under way to regulatory programs must continue. These program changes resulted from Commission reviews such as the 1989 Regulatory Impact Survey, the 1993 assessment of the operating reactor inspection program, and various public workshops and meetings on specific programs. Each program was carefully reviewed and public and industry comments were considered. The resultant changes preserved the best attributes of the program while achieving meaningful improvements. Many of these recently implemented improvements had not been reflected in the NEI report.

The NRC will monitor the results of improvement actions and work with the industry to further enhance regulatory practices. In addition, the NRC will continue to seek ways to improve the effectiveness of regulatory policies and practices.

SITE DECOMMISSIONING

MR. MYERS: When a plant is retired, NRC requires the licensee to reduce radioactive contamination at the site to an extent that would permit the site to be used for any purpose in the future. Some sites - particularly those with large inventories of radioactive materials - are having difficulty achieving this level of purity despite the expenditure of millions of dollars in cleanup costs. At other sites, owners are deferring cleanup until new technologies are developed that would reduce disposal costs. By comparison, the Environmental Protection Agency permits some chemical pollutants to remain at a site even though those chemicals may be more harmful to public health and the environment than NRC-regulated materials. What would be the increased risk to the public if the NRC raised the permissible radiation level by 10, 30, or 50 percent? What is the basis for the difference in NRC and EPA determinations on acceptable levels of site contamination?

CHAIRMAN SELIN:

Although most NRC and Agreement State licensees will have minimal difficulty in remediating their sites for license termination, a few licensees, such as rare earth processors or others processing large quantities of radioactive materials, are faced with formidable remediation costs and institutional barriers. The health and safety problem is not only with the large volumes of contaminated materials but with the concentrations of radioactivity in these volumes. Remediation of sites so that they can be used for any purpose may not always be appropriate or justified. To this end, we are developing an approach, described in our recent proposed rule on radiological criteria for decommissioning (59 FR 43200; August 22, 1994), that allows land use restrictions or other types of institutional controls to be considered for site remediation. In addition, NRC is developing Environmental Impact Statements (EISs) for the Shieldalloy Metallurgical Corporation sites in Cambridge, Ohio, and Newfield, New Jersey, the Sequoyah Fuels Site near Gore, Oklahoma, and the Parks Township Shallow Land Disposal Area near Leechburg, Pennsylvania. These EISs will analyze the technical, legal, environmental, and financial issues related to various restricted use alternatives. The information to be developed in these EISs will provide information for evaluating other sites with large volumes of thorium contamination.

Because our regulatory assessments of risk are generally proportional to the magnitude of exposure, increasing permissible radiation levels by 10, 30, or 50 percent would increase risk proportionally for those sites. The proposed rule on radiological criteria for decommissioning specifically asks for public comment on acceptable levels of risk associated with varying levels of contamination. One of the reasons for asking for comment on this issue is to determine what portion of the total dose below 10 CFR Part 20 limits of 100mrem is appropriate for decommissioning. Apportionment is undertaken to ensure that the 100mrem limit is not exceeded if there is a potential exposure to more than one source.

The Environmental Protection Agency has been an important participant in our rulemaking on radiological criteria for decommissioning, and is a cooperating agency in the preparation of the Generic Environmental Impact Statement for the rulemaking. EPA is also developing a generally applicable standard for the radiological criteria for decommissioning which is generally consistent with NRC's proposed rule. As a result, at this time, I believe both agencies are in general agreement on what constitutes an acceptable level of risk from which acceptable levels of site contamination can be derived.

NRC and EPA are also currently engaged in cooperative efforts to harmonize radiation protection standards. The agencies recently developed a draft White Paper on Risk Harmonization that compared risk assessment and risk management approaches. The paper specifically identified differences in assumptions about the extent to which humans may be exposed to contaminants. NRC, EPA, and other Federal agencies are currently considering additional actions to pursue risk harmonization.

MR. MYERS: NRC requires license applicants to provide adequate assurance that sufficient funds will be available to decommission a subject site upon license termination. Despite this requirement, it appears that some owners lack the resources necessary to clean up sites with large volumes of radioactive materials to the level of purity demanded by NRC. Without adequate private funding for cleanup activities, the government may end up absorbing cleanup sites through programs like Superfund. What actions has the agency taken to ensure that adequate funds will be available for cleanup at sites with large volumes of radioactive waste?

CHAIRMAN SELIN:
The issues are different for materials and power reactor licensees. The NRC's power reactor licensees are required to provide assurance that they will have sufficient funds to decommission their facilities when these facilities are permanently shut down. Because power reactor licensees have their rates regulated by State public utility commissions and the Federal Energy Regulatory Commission and their decommissioning funding contributions are carefully monitored by these agencies, it does not appear that any power reactor licensees lack the resources necessary to clean up their sites. Similarly, it does not appear that any of the NRC's non-power reactor licensees (i.e., research and test reactors) lack the resources necessary to clean up their sites.

For materials licensees, the NRC established general requirements for decommissioning, including financial assurance, in 1988. The decommissioning rule allowed for a phased implementation of the financial assurance requirements. NRC material licensees with quantities of radioactive material above certain specific limits, were required to have financial assurance for decommissioning by July 27, 1990. However, as a result of the phased implementation, a small fraction of material licensees do not presently have financial assurance in place that is sufficient to cover the anticipated cost of decommissioning. NRC is currently engaged in promulgating final requirements to assure that all licensees who require it have acceptable financial assurance mechanisms in place.

The NRC staff reviews and evaluates the financial assurance submittals that the licensees provide and ensures licensees keep their assurance updated. Some licensees with large volumes of waste find it difficult to ensure that funds will be available to decommission their sites in accordance with NRC's current regulations which require a site to be remediated to levels that would allow unrestricted future use of the site. The NRC is working on possible solutions to these difficulties by exploring options other than unrestricted use.

For uranium recovery facilities, NRC reviews annual surety updates to see if the licensee has properly calculated and arranged for the funds needed for reclamation. Some licensees with sureties in place covering old reclamation plans may decide to make changes to those plans. In those cases there could be a period of time (i.e., until the new plan is submitted and approved by NRC) when the existing surety will not cover their new projected costs of reclamation. NRC staff is considering ways to address this situation.

MR. MYERS: Does the NRC periodically check to ensure that licensees are setting aside adequate funds during operation to provide for payment of decommissioning costs upon license termination?

CHAIRMAN SELIN:

Yes. With regard to materials licensees, the licensees are required to provide financial assurance for decommissioning. The NRC licensing offices are responsible for ensuring that the financial assurance documents are updated according to the conditions provided in the respective financial assurance instruments. For uranium recovery facilities, NRC reviews annual surety updates submitted by the licensees in detail to determine if the licensee has properly calculated the amount needed to cover approved decontamination, decommissioning, and reclamation and to see if the estimates have been adjusted properly to account for inflation.

For power reactors, the NRC has allowed its licensees to establish collection schedules consistent with their rate cycles before State public utility commissions and the Federal Energy Regulatory Commission, which may be as long as five years. Alternatively, some licensees have complied with NRC regulations through surity bonds or letters of credit. The NRC has not yet inspected its licensees to determine that adequate funds have been set aside. The NRC does not have a requirement that its reactor licensees submit periodic reports on the status of their decommissioning funding assurance programs.

NRC ADVISORY COMMITTEES

MR. MYERS: Executive Order 12838, dated February 10, 1993, states that each executive agency shall terminate no less than one-third of the advisory committees subject to the Federal Advisory Committee Act and not required by statute. How many NRC advisory committees are subject to FACA and not required by statute? Why has not the agency terminated more than one advisory committee? Given the maturation of both the commission and the nuclear utility industry, are advisory committees still needed?

Chairman Selin:

Following issuance of Executive Order 12838 on February 10, 1993, the Commission determined that one committee was no longer necessary and could be terminated. The NRC currently has five advisory committees that are subject to the Federal Advisory Committee Act; of which one is statutorily mandated. In accordance with OMB Circular No. A-135 (October 5, 1994) the Commission re-reviewed the need to continue the existing committees and on January 4, 1995 advised OMB of NRC's need to maintain the remaining committees. The Commission believes that each of the committees meets an ongoing need for independent outside advice into the Commission's programs in order to be responsive to concerns expressed by the public and the regulated industry.

Regulatory reform legislation recently passed by the House would require peer review of risk assessments and cost benefit analyses accompanying major rules. Our advisory committees currently perform that function and we envision that these committees could be used to satisfy any new statutory requirements for peer review enacted by the Congress.

NUCLEAR MATERIALS PROGRAM

MR. MYERS: NRC regulates approximately 8,000 licenses in 21 states to individuals and entities -- such as hospitals, research facilities, and radiographers -- who handle nuclear materials. The remaining 29 states ("agreement states") have assumed authority to regulate approximately 16,000 licenses involving NRC-licensed material. NRC does not regulate naturally occurring radiation, nor does it regulate radiation produced by man-made machines such as accelerators. Because NRC does not regulate all types of radiation, even non-agreement states maintain nuclear inspection capabilities. Why doesn't the NRC relinquish its authority to regulate nuclear materials (except at nuclear power plants and fuel cycle facilities) for all states?

CHAIRMAN SELIN:

NRC is currently studying the option of terminating or reducing NRC regulation of medical activities. In a broader sense, the NRC Agreement States Program allows for states to voluntarily assume regulatory authority for nuclear materials presently under NRC jurisdiction. We are working with four additional states which have requested to join the Agreement States Program (in whole or in part).

Discontinuation of NRC regulatory authority over nuclear materials would require legislation. Furthermore, key aspects of our mission should remain at the Federal level. These pertain primarily to standard-setting and policy functions designed to ensure an adequate level of public health and safety throughout the United States, and preservation of interstate commerce.

We will be assessing this and other options in an ongoing evaluation of NRC missions and responsibilities.

HIGH-LEVEL WASTE

MR. MYERS: Last year you also said that "all NRC's direct costs related to the disposal of civilian high-level radioactive waste and spent fuel in DOE's geologic repository are paid for with dollars appropriated from the Nuclear Waste Fund." According to your budget submittal the cost to the NRC for staffing the high-level waste program in Full-Time Equivalents will be $60 million.

a. Why do you not include the entire cost of the staff time for the high-level waste program in your budget request?

b. If utility licensees pay the additional cost of $44 million for FTEs (the difference between the $22 million derived from the Nuclear Waste Fund and the $60 million for FTEs), doesn't that mean that they are being double billed for nuclear waste-related activities?

CHAIRMAN SELIN:

All of NRC's direct resources related to the disposal of civilian high-level radioactive waste and spent fuel in DOE's geologic repository are included in the budget request for the High-Level Waste Cost Center for which dollars are appropriated from the Nuclear Waste Fund. The NRC FY 1996 budget request for high-level waste activities is $22 million which includes the salaries and benefits cost for 60 full-time equivalent staff. I believe the chart on page 127 of our request may have been misinterpreted to mean $60 million in lieu of 60 FTEs. The $22 million budget request includes funds for contract support, travel, and salaries and benefits.

USER FEES

MR. MYERS: Does the NRC charge utility licensees fees, including the cost of generic research and regulatory activities, associated with licensing independent spent fuel storage installations (ISFSI)? How much was charged to licensees in FY 95? How much does the NRC estimate it will charge for these activities in FY 96?

CHAIRMAN SELIN:

The NRC charges licensing, inspection and annual fees (which include generic research and regulatory activities) to utilities for its activities that are necessary to regulate independent spent fuel storage installations/casks. In FY 1995, the NRC is proposing to assess fees to recover $2.2 million in budgeted costs for these activities. Based on the FY 1996 President's Budget, the amount to be recovered from fees in FY 1996 is estimated at approximately $2.8 million.

MR. MYERS: Since utilities are being forced to build these ISFSI facilities because DOE has been unable to take possession of spent fuel, why doesn't the NRC include these costs in the budget request to be derived from the Nuclear Waste Fund?

CHAIRMAN SELIN:

We do not include the costs for independent spent fuel storage installations at commercial reactor sites in the part of the budget appropriated from the Nuclear Waste Fund (NWF) because we understand such funding is not authorized at present under the Nuclear Waste Policy Act, as amended. This act gave DOE responsibility to administer the fund and specified the purposes of expenditures from it. In particular, section 302 of the NWPA, which established the NWF, indicates that expenditures from the NWF are for purposes of radioactive waste disposal activities under certain provisions of the NWPA, including "the identification, development, licensing, construction, operation, decommissioning, and post-decommissioning maintenance and monitoring of any repository, monitored retrievable storage facility or test evaluation facility constructed under" the NWPA. An independent spent fuel storage installation licensed to and operated by utilities would not appear to fall within the purview of this definition. However, in a May 24, 1994, Federal Register notice, DOE indicated it was examining the possible use of the NWF to offset a portion of the financial burden incurred by utilities for ISFSI storage after 1998. To our knowledge, the DOE has not completed its inquiry.

MR. MYERS: Last year the NRC transmitted to Congress a staff report detailing programs paid for by utilities for which they received absolutely no benefit. The study found that utility ratepayers are charged $35.1 million annually for these programs. You told us that "legislation is needed to enhance the fairness of our user fee schedule."

Your budget indicates that you will be submitting legislation this year to extend the 100 percent user fee assessed to utilities scheduled to expire in 1998 until the year 2000. Why are you planning to extend the fee?

CHAIRMAN SELIN:

Legislation to extend the requirement to recover 100 percent of the budget from fees is being included in NRC's proposed authorization legislation in response to a request from the Administration.

MR. MYERS: Are you planning to include a provision in that legislation which would provide means for introducing fairness and equity into your fee base?

CHAIRMAN SELIN:

Legislative changes to eliminate the fairness and equity concerns were identified in the fee policy report submitted to Congress last year. We are not planning to include these legislative changes in the proposed NRC Authorization Bill.

MR. MYERS: You told us last year that the "Commission agrees with the report that modifications to OBRA-90 are necessary that would reduce the requirement to collect 100% of the budget by deleting the cost for specific activities from the fee base." If you do not plan to submit changes in your legislation, in what way will you reduce the cost of regulatory services which do not benefit those licensees now paying for those NRC programs?

CHAIRMAN SELIN:

The Commission will delete from its budget request the cost of work performed for some Federal agencies and others that is not part of its statutory mission. The activities to be deleted include review for DOE and DOD Naval projects, and direct support (training, licensing and inspection) to Agreement States. By deleting these costs from the budget, we do not have to assess fees to recover them. The NRC would provide the support under reimbursable agreements if the support continues to be desired by the organizations.

STANDARD REACTOR DESIGNS

MR. MYERS: The Committee continues to be encouraged by the Commission's standardization and licensing rule. Please explain the status of your effort to certify a standard design reactor.

CHAIRMAN SELIN:

The NRC has received five applications for design certification by rulemaking. The status as the staff's review of these designs is as follows:

ABWR: The staff published the final safety evaluation report (FSER) and issued the final design approval (FDA) for the ABWR in July 1994. Design certification rulemaking is expected to begin in early 1995.

System 80+: The staff published the FSER and issued the FDA for the System 80+ design in July 1994. Design certification rulemaking is expected to begin in early 1995.

AP600: The staff is performing its detailed review of the AP600 design and issued a DSER in November 1994, outlining its findings, which included more than 1,100 open items. The staff is continuing its dialogue with Westinghouse to resolve the open items. A supplement to the DSER (on testing and analyses methods) is expected to be issued in October 1995. If the staff receives timely, high-quality responses from Westinghouse that address the open items, then the staff is scheduled to issue an FSER in August 1996 and an FDA in September 1996.

SBWR: In June 1994, GE made two major program decisions that have considerably altered the course and progress of the SBWR review. These decisions relate to reassessment of the SBWR test and analysis program and realignment of the overall design certification review. GE proposed suspending NRC review of the design-related portions of the SSAR until review of the test program and analytical model (TRACG) qualification was complete. GE plans to continue the TRACG qualification activities. In mid-1995 (when most of the qualification activities are scheduled to be completed), GE plans to talk with the staff about recommencing the GE and NRC SSAR design review activities and to mutually define a revised review schedule. GE plans to submit a revised SSAR in early 1996 for continuation of the SBWR design review. The staff has suspended all but its test program and TRACG review activities at this time.

CANDU 3: In September 1994, Atomic Energy of Canada, Ltd., Technologies (AECLT) applied for design certification under 10 CFR Part 52 and submitted the safety analysis report for the CANDU 3 design.

The NRC staff performed an acceptance review to determine if the CANDU 3 was sufficiently complete to enable the staff to carry out the design certification review. The staff determined that a significant amount of information was either missing, or exists in a form that would cause the staff to expend a great deal more resources to complete the design certification review than was previously anticipated.

During a meeting with AECLT representatives on March 6, 1995, the staff was informed that the AECL Board of Directors recently voted to put the CANDU 3 review on indefinite hold, meaning that no further NRC review of the CANDU 3 is requested.

EPRI: The staff also completed its review of the Electric Power Research Institute (EPRI) Utility Requirements Documents for both the evolutionary and passive designs and published its safety evaluation reports in August 1992 and August 1994, respectively.

Advanced Reactor Designs: The staff is also involved, to a lesser degree, in other advanced non-light-water reactor activities. Specifically, the staff published a preapplication safety evaluation report (PSER) in February 1994 on the Power Reactor Innovative Small Module (PRISM) design proposed by the Department of Energy (DOE). In addition, the staff is also completing the PSER on the Modular High Temperature Gas Reactor (MHTGR) and expects to publish this report in fiscal year (FY) 1995.

MR. MYERS: Please explain the process of design certification rulemaking.

CHAIRMAN SELIN:

The process of achieving design certification by rulemaking begins with an application filed pursuant to the requirements of Subpart B of 10 CFR Part 52 (§ 52.45). The NRC has received five applications for design certification by rulemaking. The applications are reviewed by the NRC's technical staff and the Advisory Committee on Reactor Safeguards. The issuance of a final design approval denotes the completion of the NRC staff's technical review phase.

If the application meets the technical requirements, then the administrative phase begins with the publication of a proposed design certification rule in the Federal Register. The proposed rule will provide for notice and comment and an opportunity for an informal hearing before an Atomic Safety and Licensing Board (§ 52.51). The proposed rule will also set forth the detailed procedures for the administrative review phase. The NRC held a public workshop to assist in the development of these procedures.

If the NRC does not receive a request for hearing within the 120-day period for submitting a request, or does not grant any of the requests, it will determine whether the proposed design certification rule meets the applicable standards and requirements of the Atomic Energy Act, the National Environmental Policy Act, and the Commission's rules and regulations, taking into account the public comments on the proposed design certification rule. If the NRC makes an affirmative finding, then it will issue a design certification in the form of a final rule by adding a new appendix to 10 CFR Part 52, and publish the design certification rule and a statement of considerations in the Federal Register.

If a hearing is granted, then all matters related to the proposed design certification rule, including those matters for which the Commission authorizes a hearing, will be resolved by the Commission after the licensing board has closed the hearing record and certified it to the Commission. If the Commission makes an affirmative finding, the Commission will issue a final design certification rule as described above.

MR. MYERS: Please explain the process of design certification rulemaking.

(B) How long is it expected to take?

CHAIRMAN SELIN:

The administrative review phase of the design certification rulemaking is expected to take 12 to 18 months depending upon whether a hearing is held and the number and nature of the issues in dispute.

MR. MYERS: Please explain the process of design certification rulemaking.

(C) What measures is the staff taking to streamline the process?

CHAIRMAN SELIN:

The NRC has chosen informal hearing procedures for the design certification rulemaking process. With the use of an informal hearing process, it is expected that the design certification rulemaking process will be more efficient.

NUCLEAR REGULATION

MR. BEVILL: You indicated last year that the NRC was in the process of examining its rulemaking practices to see whether they can be streamlined to the point where you could promulgate rules in less than two years. What were the results of your study? Did you find that you could reduce the cost associated with rulemaking within the Office of Nuclear Regulatory Research, which you said represented approximately $112 million or 21 percent of the agency's FY 1995 budget?

CHAIRMAN SELIN:

We have now completed both the examination of our rulemaking practices and a revision of rulemaking procedures to implement the conclusions of the study. The major finding of the study is that a more comprehensive planning process that includes earlier involvement of all levels of agency management in the review of each rulemaking at the conceptual stage would increase the efficiency of the rulemaking process. This more vigorous planning should allow us to foresee and avoid potential pitfalls which might otherwise cause delays. It will also help assure at an early stage, before significant resources are expended, that our rules are consistent with agency policy objectives and cost benefit standards. We are now implementing this new planning process for new rules currently being considered for initiation.

While we are confident that the new procedures will result in efficiencies and will ultimately reduce the average time for completing rulemaking, we cannot quantify the impacts at this early stage of implementation.

Funding for the Office of Nuclear Regulatory Research represents approximately 20% of the NRC's FY 1996 budget request. Of that amount, approximately 14% is associated with rulemaking and standards development. This represents less than 3% of the NRC's fiscal year 1996 budget request. The remainder of the Nuclear Regulatory Research budget is for specific research projects.

MR. BEVILL: Last year you said that credit for improvements in safety and capacity factors must be given to individual nuclear utilities. I understand that the NRC has decided to forego publishing a good plant performer list. What other activities do you have planned to reduce regulatory burdens on nuclear utilities?

CHAIRMAN SELIN:

In May 1994, the Commission established the "Continuing Program for Regulatory Improvement." The program is based on the fundamental principle that all regulatory burdens must be justified and that the regulatory process must be efficient. The Continuing Program for Regulatory Improvement consists of three NRC initiatives:

1. The Marginal to Safety Program: The Marginal to Safety Program is the agency's continuing effort to eliminate or modify regulations that are marginal to safety and impose a substantial regulatory burden on licensees. The first petition for rulemaking to be worked under the Marginal to Safety Program, a change to a performance-based and risk-based approach to containment leakage testing is in progress and is expected to be issued mid-summer 1995. The new performance-based rule could save from $500 to $750 million industry-wide.

2. The Regulatory Review Group Implementation Plan: In 1993, a group of senior-level NRC staff identified areas with significant potential for relief of burden with little or no adverse safety impact. The group

proposed 71 recommendations, 30 of which have been completed. Examples of recommendations implemented include the development of an agency-wide program to implement risk-assessment techniques in regulatory applications, issuance of fire protection guidance which provides licensees with additional flexibility to meet regulatory requirements, and elimination of selected regulatory reporting requirements.

3. The Cost Beneficial Licensing Action Program (CBLA): The objective of the CBLA program is to increase the agency's responsiveness to submittals from licensees that reduce or eliminate license requirements that have an incrementally small effect on safety but are a high economic burden. As of December 29, 1994, licensees had submitted 144 CBLAs to the staff. Of these 144 submittals, 83 have been approved thus far, for a cost savings (based on licensees' estimates) of over $407 million.

The NRC staff is also effecting regulatory burden reduction with implementation of the (1) Technical Specification Improvement Program and (2) the Line Item Improvement Process.

1. Technical Specification Improvement Program: The Technical Specification Improvement Program can save licensees' financial and staff resources by relocating 30 to 40 percent of existing license requirements to licensee controlled documents. This allows licensees to implement changes to these requirements using an approved NRC method without the need for prior NRC staff approval. While the benefits of converting to the new technical specifications are hard to quantify, licensee owners groups project annual savings of between $150,000 and $1.13 million per site from the program. In total, licensees for over 40 units are currently pursuing conversion to the new technical specifications.

2. Line Item Improvement Process: The Line Item Improvement Process is similar to the Technical Specification Improvement Program in that it allows licensees to relocate specific license requirements to licensee controlled documents. Since 1988, the NRC staff has alerted the

industry to over 17 license changes that could be pursued as line item improvements. Approximately 80 percent of the eligible licensees have taken advantage of these line item improvements.

The NRC is revising the systematic assessment of licensee performance (SALP) program to implement a mandatory extension in the SALP evaluation period to 24 months for plants that meet the criteria for recognition as superior performing plants. In addition, the NRC will reduce planned inspection effort to be consistent with the plant's superior level of performance.

HIGH-LEVEL WASTE

MR. FAZIO: Is the NRC in support of the industry efforts to license transportable storage systems for spent nuclear fuel in advance of DOE's MPC (multi-purpose cask) System?

CHAIRMAN SELIN:

NRC is supportive of efforts to provide safe storage and transport of spent nuclear fuel as needed. NRC recognizes that some utilities may need to store spent fuel in advance of the availability of DOE's MPC. This need is due to decreased storage space in spent fuel pools as well as the beginning of decommissioning efforts at some reactor sites. Therefore, the NRC is prepared to review applications for the approval of dual-purpose casks for storage and transport in advance of DOE's MPC system.

MR. FAZIO: Does the NRC consider the transportable storage systems for spent nuclear fuel currently in license review compatible with the DOE's MPC concept?

CHAIRMAN SELIN:

The transportable storage systems under review by NRC will be compatible with DOE's MPC concept to the extent that the systems can be used for both storage and transport. However, it is difficult to determine their compatibility with disposal because these systems were not designed for this use, and the disposal environment has not been determined.

MR. FAZIO: What is the NRC's position regarding re-licensing existing storage canisters for transportation purposes?

CHAIRMAN SELIN:

The Commission encourages the compatibility of storage casks for transportation, and our regulatory process allows an applicant to apply for transportation certification of a previously approved storage system. However, in some cases it may be impractical to adopt the storage system to transportation (e.g., the storage system may be too large for rail or highway movement). In order to obtain certification of a storage system for transportation, an applicant must demonstrate that the storage design can meet the Commission's transportation safety requirements. To date, NRC has not received any applications for transportation certification of previously approved storage systems.

HIGH-LEVEL WASTE

MR. FRELINGHUYSEN: The NRC has been reviewing DOE's new program approach for the storage and disposal of spent nuclear fuel.

(A) What are your observations so far?

CHAIRMAN SELIN:

DOE's program approach has laudable goals. It streamlines the site characterization process and sets out schedules that allow for measurable, demonstrable progress toward DOE's determination of the suitability of Yucca Mountain as the site for permanent disposal of high-level nuclear waste. DOE has focused its program on the site suitability process.

Another step taken under the program approach is the creation of a systematic schedule for the development of the environmental impact statement which is required to accompany a repository license application.

All of the schedules in the program approach, however, appear to be very ambitious. It is questionable whether sufficient time has been allowed for the review process for high-level findings which involves review by National Academy of Science panels. In addition, schedules for tests required to collect data are such that some tests will not be completed in time to support the particular suitability finding for which the test is being conducted.

DOE has not yet described in detail its plan for using the program approach for demonstrating compliance with the regulatory requirements of 10 CFR Part 60. These are the NRC licensing requirements against which an application for authorization to construct a repository will be measured.

MR. FRELINGHUYSEN: The NRC has been reviewing DOE's new program approach for the storage and disposal of spent nuclear fuel.

(B) Do you think the program approach can succeed?

CHAIRMAN SELIN:

We know of no technical reason that the program approach should not succeed, with the following provisions: DOE must demonstrate how it will apply the program approach to repository licensing; contingencies must be made for any schedule slippage caused by delays in the site suitability findings; DOE must provide the NRC staff with the necessary information to enable NRC to provide effective pre-licensing consultation.

MR. FRELINGHUYSEN: The NRC has been reviewing DOE's new program approach for the storage and disposal of spent nuclear fuel.

(C) What, if any, changes would the NRC recommend regarding the new program approach?

CHAIRMAN SELIN:

The NRC believes that it is critical for DOE to demonstrate how it will apply the program approach to repository licensing. Development of the requirements for licensing preceded the development of the requirements for site suitability determination. The NRC believes that, for the most part, the data needed to address the suitability requirements are a subset of the data needed for demonstrating compliance with the licensing requirements and, therefore, focusing on complying only with the suitability requirements could result in an incomplete set of data and analyses for licensing. DOE should consider the entire program of data collection and analysis needed to support both site suitability and licensing.

USER FEES

MR. CHAPMAN: Last year you told this Committee that the NRC activities in support of nuclear reactor safety overseas was recovered through annual fees assessed to U.S. utility licensees. Why would the federal government charge the private sector for what seems to be a national security issue? How much money is budgeted for these international activities in FY96?

CHAIRMAN SELIN:

Public Law 101-508, the Omnibus Budget Reconciliation Act of 1990, as amended, requires the NRC to collect fees that approximate 100 percent of its budget authority, less appropriation from the Nuclear Waste Fund. The Act limits the assessment of these charges to NRC licensees. Funds to support certain NRC international activities are included in the NRC budget and therefore must be recovered from NRC licensees, e.g., U.S. utilities. We estimate that approximately $11 million would need to be recovered in fees in FY 1996 for these international activities.

As we have previously indicated, the 100 percent recovery requirement raises fairness and equity concerns, because there are certain budgeted activities that do not directly benefit the NRC licensees that are required to pay fees.

The activities that cause the fairness and equity concerns were identified in a report to Congress, as required by the Energy Policy Act of 1992. The report recommended that OBRA-90 be modified to prevent placing an unfair burden on certain licensees by removing from the fee base the cost of certain services which do not directly benefit NRC licensees. Examples of these services are the Agreement State program, the statutory fee exemption for Federal agencies, the Commission fee reduction for small entities in accordance with the Regulatory Flexibility Act, and certain international activities which have increased significantly due to such factors as high levels of support of the Vice President's initiatives in the Former Soviet Union and Central and Eastern Europe; expanded cooperation with rapidly developing countries in the Pacific Rim; and legal obligations placed on the NRC by the new international Convention on Nuclear Safety. To eliminate these activities and therefore improve the fairness and equity of NRC fees, the Commission prefers that OBRA-90 be changed to require NRC, to recover approximately 90 percent, rather than 100 percent, of its budget authority, less the amount appropriated from the Nuclear Waste Fund, through the assessment of fees. This would mean that about $50 million of new budget authority would have to be obtained from general revenues rather than from fees.

REACTOR LICENSE EXTENSION

MR. CHAPMAN: Last year, you said that you were unaware of any DOE or EPRI plans to identify new lead plants for license renewal, which you said would make a significant contribution in energy savings to the nation. DOE has requested an increase in funding for license extension.

Are you aware of any changes in the DOE program which would indicate that they have identified a new plant? Please describe your activities in support of plant license renewal.

CHAIRMAN SELIN:

The Nuclear Regulatory Commission (NRC) is not aware of any changes in the DOE program indicating that they have identified a new lead plant.

The decision whether to seek license renewal rests with the licensees. The NRC's intent is to establish a reasonable process and safety standards so that licensees can make timely decisions whether to seek license renewal or not. The NRC has issued regulations governing license renewal which are contained in Title 10 of the Code of Federal Regulations, Part 54. These regulations are currently undergoing revision to simplify and clarify the renewal process. A parallel rulemaking effort is also underway which concerns environmental protection issues related to license renewal. This rulemaking is based on the belief that certain environmental issues can be treated generically, rather than in each plant specific licensing review. This approach should result in increased regulatory efficiency and conservation of licensee and NRC staff resources.

Additionally, the NRC is involved with a number of industry efforts. The Nuclear Energy Institute is the lead industry group interacting with the NRC on the license renewal rule and policy issues. The Babcock & Wilcox Owners Group has formulated a generic license renewal program that will begin submittal of technical reports for review in 1995 with plans for a lead plant license renewal application in late 1997. Baltimore Gas and Electric Company is developing a specific approach for the Calvert Cliffs plant and also plans to submit technical reports in 1995. The Westinghouse and Boiling Water Reactor Owners Groups have also met with the staff to discuss their license renewal programs and will be submitting technical reports for NRC review in 1995 and 1996.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
Office of Public Affairs
Washington, D.C. 20555

IVAN SELIN

On July 1, 1991, Ivan Selin became Chairman of the Nuclear Regulatory Commission, the federal agency responsible for regulating all safety and environmental aspects of the civilian use of atomic energy. Previously he was Under Secretary of State for Management from May 23, 1989 to June 30, 1991. In that capacity, he served as the principal adviser to the Secretary of State on all matters involving the allocation of State Department resources in support of the President's foreign policy objectives.

Prior to joining the State Department, Mr. Selin was the chairman of the board of American Management Systems, Inc., a computer systems, services, and consulting firm that he founded in 1970. In his nineteen years with the company, AMS grew into a publicly traded firm with revenues of $215 million per year, approximately the fifth largest independent firm in its industry in the United States. Mr. Selin's principal responsibilities with the firm concerned corporate strategy and management. His primary area of expertise was in comprehensive financial management systems and procedures with an emphasis on applications to the federal government and to energy.

From 1965 to 1970, Mr. Selin served in the office of the Assistant Secretary of Defense (Systems Analysis); he acted as the Assistant Secretary at the end of that period. In addition to substantive analysis of various defense force planning issues, he was responsible for a number of major reforms in the Department of Defense's force planning and financial management processes which allowed the Secretary of Defense to delegate many management responsibilities while improving his ability to monitor and control the results.

From 1960 to 1965, Mr. Selin was a research engineer at the RAND Corporation, where he divided his time between national security issues and publishable research in statistical communication theory.

Mr. Selin has served as chairman of the Military Economic Advisory Panel to the Director of Central Intelligence (1978-1989); member (1979-1989) and chairman (1988-1989) of the Board of Governors of the United Nations Association-USA; member of the Advisory Board on the USSR and Eastern Europe at the National Academy of Sciences (1986-88); and member of the Council on Foreign Relations (1979-present). He also has been extensively involved in activities directed against drug abuse.

In 1960, Mr. Selin received a Ph.D. from Yale University in electrical engineering (with distinction). In 1960-1961 he was a Fulbright Scholar and in 1962 he received a Dr. es Sciences degree from the University of Paris in mathematics (with highest honors). He speaks six languages and has travelled extensively.

Mr. Selin has been married to the former Nina Cantor since 1957. They have two children, Jessica and Douglas.

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June 1991

UNITED STATES
NUCLEAR REGULATORY COMMISSION
Office of Public Affairs
Washington, D.C. 20555

KENNETH C. ROGERS

Kenneth C. Rogers was sworn in for a second term as a member of the Nuclear Regulatory Commission on June 12, 1992. Commissioner Rogers' new five-year term commenced on July 1, 1992. Before joining the Commission, Dr. Rogers served as president of Stevens Institute of Technology for 15 years.

He joined Stevens in 1957 following research appointments at Cornell University. At Stevens he served the college as a professor, head of the physics department, dean of the faculty and acting provost before becoming its president in 1972. He has held appointments at Princeton University and the City University of New York concurrent with his Stevens positions. In 1987 he was designated President Emeritus at Stevens.

A physicist by training, Dr. Rogers' technical areas of expertise include plasma physics, particle accelerators, optical spectroscopy, elementary particle physics and nuclear instrumentation. He is the author of more than 30 technical papers, and two patents.

Dr. Rogers was appointed by the Governor as a member of the New Jersey Commission on Science and Technology and is a member of numerous professional societies, including the American Physical Society, American Nuclear Society, and Senior Member Institute of Electrical and Electronics Engineers. He is a Fellow of the American Association for the Advancement of Science.

He has served as a director of the Public Service Enterprise Group (formerly Public Service Electric and Gas Company of New Jersey) and was a charter member of the Board of Director's Nuclear Oversight Committee. He has been a director of the First Jersey National Bank as well as a trustee of the Christ Hospital Jersey City, NJ; the Association of Independent Colleges and Universities in New Jersey; the Independent College Fund of New Jersey; and the Hoboken (NJ) Chamber Orchestra.

He received a bachelor of science degree in physics from St. Lawrence University (1950) and a master of arts degree in physics (1952) and doctor of philosophy degree in physics (1956) from Columbia University. He was awarded an honorary doctorate degree by St. Lawrence University in 1983 and by Stevens Institute of Technology in 1987. He was the first recipient of the Hudson County (NJ) Humanitarian Award of the National Conference of Christians and Jews in 1985.

Born In Teaneck, New Jersey, Dr. Rogers and his wife Katharine have three children.

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April 1993

UNITED STATES
NUCLEAR REGULATORY COMMISSION
Office of Public Affairs
Washington, D.C. 20555

DR. E. GAIL DE PLANQUE

Dr. E. Gail de Planque was sworn in as a member of the Nuclear Regulatory Commission on December 16, 1991 to serve a term ending June 30, 1995.

Before joining the Commission, Dr. de Planque served as the Director of the Department of Energy's Environmental Measurements Laboratory (EML) located in New York City. From 1982-1987 she held the position of Deputy Director. Prior to that appointment, Dr. de Planque was a Physicist with the Radiation Physics Division, a position held since she joined the Laboratory in 1967.

As Director, Dr. de Planque was responsible for the guidance, direction and management of the programs, activities, budget, and administrative functions of the Laboratory, a direct descendant of the Manhattan Project, funded primarily through the Department of Energy's Office of Energy Research. EML conducts environmental research concerning pollutants associated with energy technologies and related national security activities, principally for the purpose of providing the scientific information required to determine the consequent effects on human health and the environment. The Laboratory is particularly renowned for its long-standing global radiation fallout programs as well as research on radiation dosimetry, radon and radiation problems associated with nuclear facilities and weapons testing.

Over the years, Dr. de Planque's research efforts centered around experimental and theoretical investigations involving the application of the basic physics of radiation interactions with matter to problems of radiation protection. Her areas of specialty include solid state dosimetry, radiation transport and shielding, environmental radiation, nuclear facilities monitoring and problems of reactor and personnel dosimetry.

Dr. de Planque's professional activities have included extensive participation in standards management and development both nationally and internationally. Dr. de Planque has published over 65 scientific journal articles, proceedings and reports, has served on the editorial board of the 'Radiation Protection Dosimetry' journal, has been on the scientific advisory and editorial committees of the series of International Conferences on Solid State Dosimetry, is a member of the National Council on Radiation Protection and Measurements (NCRP), and has given numerous scientific lectures both in the U.S. and abroad.

February 1992

She is a member of several professional organizations including the Health Physics Society and the American Nuclear Society (ANS) of which she is a Fellow. During 1988-89, Dr. de Planque was President of the ANS, a scientific and educational organization with a worldwide membership of over 16,000 engineers, scientists, educators and managers dedicated to the study of nuclear science and technology. She has also served as President of the Pacific Nuclear Council and was a charter signatory for the International Nuclear Societies Council, established in 1990.

Dr. de Planque received an A.B. Degree in mathematics from Immaculata College in 1967, an M.S. Degree in physics from New Jersey Institute of Technology in 1973, and a Ph.D. in Environmental Health Sciences from New York University in 1983. She has served as an Adjunct Research Professor, New York University Medical Center and was the 1990 recipient of the national "Women of Achievement in Energy" award as well as a 1991 recipient of the Outstanding Woman Scientist of the Year award from the New York Metropolitan Chapter of the Association for Women in Science.

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February 1992

UNITED STATES
NUCLEAR REGULATORY COMMISSION
Office of Public Affairs
Washington, D.C. 20555

JAMES M. TAYLOR

James M. Taylor was named Executive Director for Operations of the Nuclear Regulatory Commission in December 1989. The Executive Director for Operations is the chief staff official of the NRC, managing day-to-day operations of the agency and reporting directly to the Commission. In June 1991, Mr. Taylor was also designated as the NRC's Chief Financial Officer (CFO). The CFO oversees all accounting, budgeting and other financial management activities of the agency.

Mr. Taylor was named Deputy Executive Director for Nuclear Reactor Regulation, Regional Operations and Research in January 1989. Since April 1987, he had served as Deputy Executive Director for Regional Operations and Acting Deputy Executive Director for Operations.

He joined the NRC in May 1980 and since then has served in positions of increasing responsibility, becoming Deputy Director of the Office of Inspection and Enforcement in October 1983 and Director of that Office in January 1985.

In 1989, he received the Distinguished Senior Executive award, the highest award of the Federal Government's Senior Executive Service.

Immediately prior to joining the NRC staff, he served in the Office of Naval Reactors as Associate Director of the Department of Energy's High Speed Submarine Projects, after earlier serving 20 years as an engineering duty officer in the U.S. Navy Nuclear Power Program.

Mr. Taylor is a 1956 graduate of the U.S. Naval Academy where he earned a bachelor of science degree. In 1961, he earned a master of science and engineering degree from the Massachusetts Institute of Technology.

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March 1992

**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
**Office of Public Affairs
Washington, D.C. 20555**

KAREN D. CYR

On July 2, 1994, Karen D. Cyr became General Counsel of the Nuclear Regulatory Commission.

Ms. Cyr is a 1970 graduate of Iowa State University. Following graduate study in political science at the University of North Carolina, she earned a law degree from Duke University in 1977. Ms. Cyr's service in the legal aspects of the nation's nuclear program began in 1977 when she joined the staff of the Nuclear Regulatory Commission. Among the positions she has held are Enforcement Attorney in the Office of NRC's Executive Legal Director, 1977-1986; Legal Assistant to the Atomic Safety and Licensing Appeal Panel, 1979; Senior Rulemaking Attorney in the Office of the General Counsel, 1988-1989; Legal Assistant to Chairman Kenneth M. Carr, 1989-1991; Legal Counsel and Chief of Staff to Chairman Ivan Selin, 1991-1993; Associate General Counsel, 1993, and Deputy General Counsel for Hearings, Enforcement and Administration, 1993-1994, in the Office of the General Counsel.

February 1995

UNITED STATES
NUCLEAR REGULATORY COMMISSION
Office of Public Affairs
Washington, D.C. 20555

DAVID C. WILLIAMS

David C. Williams became the first Inspector General of the Nuclear Regulatory Commission on November 22, 1989. The position was established by Congress in early 1989.

The duties of the Inspector General include supervising and coordinating audits and investigations of all NRC programs and operations and keeping the NRC Chairman and Congress fully informed of fraud, abuses and deficiencies relating to the administration of those programs and operations.

Mr. Williams, nominated by President Bush, had been Director of the Office of Special Investigations at the General Accounting Office since 1986.

Previously, Mr. Williams was Director of Operations in the Office of Labor Racketeering at the Department of Labor, 1984-86; Supervisory Staff Investigator for the President's Commission on Organized Crime, 1983-84; Special Agent-in-Charge, Office of Labor Racketeering, Department of Labor, in New York and Cleveland, Ohio and Supervisory Special Agent in Chicago, 1979-84; Special Agent for the U.S. Secret Service in Chicago, 1975-79.

He was graduated in 1971 from Southern Illinois University with a bachelor of science degree. He received a masters degree in education in 1973 and an advanced degree in education in 1975 from the University of Illinois.

Born January 7, 1947, Mr. Williams resides in Alexandria, VA.

March 1992

UNITED STATES
NUCLEAR REGULATORY COMMISSION
Office of Public Affairs
Washington, D.C. 20555

RONALD M. SCROGGINS

Ronald M. Scroggins was appointed Controller of the Nuclear Regulatory Commission (NRC) in February 1982. In December 1991, Mr. Scroggins was also designated as the NRC's Deputy Chief Financial Officer. As the Deputy Chief Financial Officer/Controller, Mr. Scroggins is responsible for the management of all accounting, budgeting and other financial activities of the agency.

Mr. Scroggins first joined the former Atomic Energy Commission (AEC) in March 1960 as a Chemical Engineer in the Division of Reactor Development. Since that time, he has held progressively responsible positions at the AEC/NRC, including Chief, Systems Engineering Branch, Division of Reactor Safety Research. In August 1978, he was appointed Director, Administration and Resource Control Staff, Office of Nuclear Regulatory Research.

Prior to joining the AEC/NRC, Mr. Scroggins served as a reactor engineer with Babcock and Wilcox from July 1957 to March 1960.

Mr. Scroggins received a bachelor of science degree in chemical engineering from Wayne State University in 1957.

In 1990, Mr. Scroggins received the Presidential Meritorious Rank award.

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March 1992

STATEMENT SUBMITTED BY

UNITED STATES NUCLEAR REGULATORY COMMISSION

TO THE

SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT

COMMITTEE ON APPROPRIATIONS

UNITED STATES HOUSE OF REPRESENTATIVES

CONCERNING

THE FISCAL YEAR 1996 BUDGET FOR THE

NUCLEAR REGULATORY COMMISSION

PRESENTED BY

IVAN SELIN

CHAIRMAN

SUBMITTED: MARCH 3, 1995

U.S. NUCLEAR REGULATORY COMMISSION
FY 1996 BUDGET TESTIMONY

Mr. Chairman and members of the Subcommittee, we are pleased to appear before you to discuss the Nuclear Regulatory Commission's (NRC) budget request for fiscal year 1996. Accompanying Commissioners Rogers, de Planque, and myself are the NRC Executive Director for Operations and Chief Financial Officer, the General Counsel, and the Inspector General.

As you know, the safe use of nuclear materials for peaceful purposes is an important national goal. The Congress has entrusted the NRC with the primary Federal responsibility for achieving that goal. The scope of our responsibility includes regulation of commercial nuclear power plants; research, test, and training reactors; fuel cycle facilities; medical, academic, and industrial uses of nuclear materials; and the transport, storage, and disposal of nuclear materials and wastes.

Before discussing the details of our fiscal year 1996 budget request, we would like to take this opportunity to: 1) provide an overview of how NRC has been reforming its operations consistent with the goals of both the Administration and Congress, 2) describe NRC's principal programs and our priorities for the agency, and 3) explain how we are using our resources to fulfill our statutory mission.

REFORMING OPERATIONS

I am pleased to report that NRC has taken a number of steps over the past few years which are clearly in line with the Administration's and Congress' objectives to improve efficiency by reducing unnecessary regulatory burden and improving NRC's internal processes. We have recognized that there is room for improvement in our regulatory programs that can reduce the cost of regulation while maintaining protection of the public and the environment. To that end, the NRC has conducted self-assessments as well as encouraged active participation by the public and industry as we pursue regulatory reform. Customer feedback has been an important aspect of evaluating our regulatory programs. We have conducted surveys of our licensees, held annual regulatory information exchange workshops, expanded our use of public workshops, and instituted an enhanced participatory rulemaking.

The NRC has completed a number of activities to reform its operations; a number of others are ongoing. I will highlight some of the more important activities and refer you to the Table in the Appendix for a summary of all activities.

Improvement to Reactor Regulations

The two most important regulatory improvements to streamline NRC's reactor licensing program are our regulations on: 1) the license renewal process to help the nation reap the full benefit of industry investment through the renewal of 40 year operating licenses up to an additional 20 years, and 2) early site permits, standard design certification, and combined construction permits and operating licenses for future nuclear power reactors. The purpose of both these major agency initiatives is to resolve safety issues while providing current and future reactor licensees a streamlined and stable licensing process for making major investment decisions.

In the past, the NRC has used probabilistic risk assessment (PRA) in the regulatory process with caution. As methods of analysis have evolved and become more standardized and data bases have become more reliable, the NRC continues to expand its use of risk assessment as a means to ensure that the NRC and industry are focused on the most safety significant issues. We are relying substantially on PRA in revising our regulations; assessing the safety importance of operating reactor events; in individual plant examinations, in which all commercial reactor licensees are performing PRAs in order to identify any severe accident vulnerabilities needing attention; and in review of advanced reactor designs. Significant progress has been made in the use of risk assessments for review and approval of both generic and individual licensing amendments. This helps to expedite processing of license amendments to eliminate unnecessary requirements.

Improvement to Nuclear Material Regulation

In the regulation of nuclear materials, the NRC has long had and continues to build a robust regulatory program with the States. The NRC, through its Agreement State Program, has discontinued its regulatory authority to allow twenty-nine States to regulate byproduct, source, and certain special nuclear materials. This program has been an outstanding example of Federal/State regulatory cooperation.

As an initial step in our evaluation of whether our radioactive materials program standards and regulations are focused on significant health and safety issues, the Commission is reevaluating its regulation of the medical use of byproduct radioactive materials as specified in the Atomic Energy Act. Our objective is to determine whether the depth of NRC regulation provides a significant benefit to public health and safety.

Improvements to Management of NRC

In partnership with the National Treasury Employees Union, we have reviewed our organizational structure in the agency's major offices, and identified ways to eliminate a layer of management. Over the past few years we have combined two of our five regional offices, and closed the Uranium Recovery Field Office in Denver.

The NRC has also been able to tighten financial operations, allowing us to increase the effectiveness and efficiency of program financing. For example, we are providing closer scrutiny of the need for planned projects, and more expeditious closeout of completed contracts. Our financial management efforts have contributed to the agency's ability to propose a $12.7 million rescission in our fiscal year 1994 appropriation and to absorb, without regulatory impact, a $20 million reduction to our FY 1995 budget request.

Although the Commission has already made improvements to some of its processes, it has directed the NRC staff to examine NRC functions and activities systematically to further improve efficiency.

NUCLEAR REACTORS

I now would like to give you an overview of our principal programs and priorities. In the power reactor program area, the NRC's focus is directed at overseeing and improving the overall safety performance of operating reactors and conducting the necessary research to support these regulatory activities. As you know, more than 20 percent of the nation's electricity is generated by the 107 nuclear power reactors operating in the U.S., and we are pleased to report that overall safety performance, reliability, and availability for U.S. power reactors continue to improve. The overall safety performance is demonstrated by the key operational safety indicators monitored by the NRC, which include forced outage rates, automatic scrams while critical, and significant events. In addition, average plant operating and maintenance costs have also continued to decrease.

Although overall safety performance is improving, the average U.S. operating reactor is getting older. Aging affects all reactor structures, systems, and components to varying degrees and has the potential to increase risk to public health and safety if its effects are not controlled. The challenge is to monitor, detect, and mitigate aging degradation through maintenance, repair, or replacement. Research is essential to meet this challenge to allow older reactors to continue in safe and economic operation. While giving priority to ensuring safety at operating facilities, the NRC must also apply resources to the issues of extending the license term for operating reactors and certifying new standard reactor designs.

Renewing Operating Licenses

The Atomic Energy Act limits commercial power reactor licenses to 40 years, but also permits the renewal of such licenses. We have been actively putting in place the license renewal process to help the nation reap the full benefit of industry investment through the renewal of operating licenses. As a result of a workshop and subsequent comment, we published a proposed license renewal rule in September 1994 for public comment. The staff is currently reviewing the comments and expects to issue a final rule in FY 1995. This rule focuses on the practices for managing potential age-related challenges rather than on resolution of the underlying aging processes. These practices will depend heavily on ongoing plant maintenance programs since current reactor safety programs are a key part of license renewal. After many years of intensive efforts by the NRC and the nuclear industry, no insurmountable industry-wide safety challenges related to aging of nuclear power reactors have been identified; the combined NRC and industry research programs have solved each issue that has arisen. However, since experience with aging in the second half of the 40-year license term is limited, the effects of aging on some plant equipment have yet to be fully determined.

Certification of Standard Designs

The Commission has supported the concept of nuclear power plant standardization to enhance safety, reduce cost to industry, and implement licensing reform which standardization makes possible. We have established a procedural framework which makes it possible to resolve safety and environmental issues before, rather than after, reactors are built. This framework provides for the issuance of early site permits, standard design certification, and combined construction permits and operating licenses for nuclear power reactors.

We are pleased to report that we have issued two final design approvals and are continuing to make progress to certify standard reactor designs. We expect that the design certification rulemaking process for the two standard reactor designs which are before the Commission -- the General Electric Advanced Boiling Water Reactor and the Combustion Engineering System 80+ -- will be completed in FY 1996.

We also are reviewing two additional standard design applications for novel light water reactor designs which employ passive safety features and modular construction--the Westinghouse AP600 and the General Electric Simplified Boiling Water Reactor (SBWR). It should be noted that GE has refocused its SBWR design review to resolving testing-related issues, which will extend the schedule for submitting material to the NRC for review. In addition, in FY 1996 the NRC is prepared to begin the review of the generic and policy issues of the Atomic Energy of Canada, Ltd. Technology's (AECLT) CANDU-3 design, as requested by AECLT. AECLT informed NRC that it will amend its application for design certification of the CANDU-3 design by January 1997.

NUCLEAR MATERIALS AND NUCLEAR WASTE

The NRC is also responsible for ensuring that public health and safety, worker safety, and the environment are adequately protected when radioactive materials are used, transported, stored, or disposed. Although we continue to focus on the safe use of radioactive materials by the approximately 7000 medical, academic, industrial, and commercial users licensed by the NRC, we also are expanding efforts to improve our effectiveness in two other important areas -- our Agreement State program and management of the high-level radioactive waste storage and disposal program.

Materials

The initial step in our evaluation of whether our radioactive materials program standards and regulations are focused on significant health and safety issues involves the NRC's program to regulate the medical uses of byproduct radioactive materials. Our objective is to determine whether the depth of NRC regulation, which applies to only 25 percent of radiation therapy treatments that occur in the 21 NRC regulated States, provides a significant benefit to public health and safety. As it now stands, we believe that the level of regulatory authority currently applied to the medical use of byproduct material may not be the best use of limited resources since there does not appear to be a comparable degree of Federal regulation in any other area of medicine, and State boards already regulate the practice of medicine. To help us evaluate the effectiveness of our regulation in this area, we have drawn on the expertise and experience of our Advisory Committee on the Medical Uses of Isotopes, Agreement States, professional organizations, other regulatory agencies, and the medical community. We have also asked the National Academy of Sciences to conduct an independent review of our regulation of the medical use of byproduct material. The Commission will be briefed on the preliminary results of the Academy's review in March and expects their final report to be issued in early 1996. We intend to consider the findings of this report as we evaluate possible changes to our program for regulating the medical use of byproduct material, which may include working with Congress to make legislative changes.

We are pleased with the progress made in improving the interface between NRC and the Agreement States. Working closely with the States, licensees, and citizens groups, we are developing a policy statement on Agreement State Adequacy and Compatibility with the NRC regulatory programs. We also developed a pilot program, in consultation with the Agreement States, for the use of common performance indicators to evaluate both the Agreement States and the NRC materials programs. These indicators will provide NRC and Agreement State management with a more systematic and integrated approach for evaluating the strengths and weaknesses of their nuclear material licensing and inspection programs. We are currently evaluating the results of the pilot program and expect to implement the program in FY 1996.

The Energy Policy Act of 1992 conferred new responsibilities on the NRC to oversee the operations of the U.S. Enrichment Corporation (USEC). We issued the final regulations for certification of these uranium enrichment facilities in September 1994. USEC's application is expected in April 1995, and we will assume regulatory oversight after completion of the first annual certification in October 1995. As part of our regulatory oversight, we now have two resident inspectors on site at each of the two uranium enrichment facilities.

Nuclear Waste Disposal

In the area of nuclear waste disposal, the NRC is responsible for providing the regulatory framework that will assist the States to develop programs for disposal of low-level radioactive waste, licensing the disposal of uranium mill tailings, and licensing a high-level radioactive waste geologic repository. In the area of high-level waste, we have been participating in a wide range of activities including public meetings; meetings with State and local government representatives; and reviewing site characterization plans, site selection criteria, conceptual designs, and quality assurance plans. Actions related to high-level radioactive waste disposal include developing a management plan that addresses the recently implemented changes in DOE's program to characterize, determine site suitability, and license a geologic repository at Yucca Mountain, Nevada. We are also placing priority on the multi-purpose canister storage and transportation reviews that are central to DOE's solution for spent fuel storage, transport, and disposal.

Cleaning Up Contaminated Sites

Significant progress has been made in resolving the technical and regulatory obstacles in the decommissioning program. Of particular note is NRC's proposed rule on radiological criteria for decommissioning, which establishes a predictable and reasonable regulatory framework for decommissioning while ensuring protection of the public and the environment. This rule was developed through a public participation process unprecedented for the NRC. Through this enhanced participatory rulemaking process, we encouraged a wide range of interested parties to discuss their views on the issues associated with radiological decommissioning criteria and as a result were able to develop a much stronger and more effective rule. We expect to publish the final rule in FY 1996 along with supporting regulatory guidance to be used on a trial basis.

We also have successfully removed five of the sites included in the site decommissioning management plan (SDMP). Of these five sites, three were successfully remediated in FY 1994. Of the three sites remediated in FY 1994, two sites have been released for unrestricted use and one site was transferred to DOE. The SDMP currently includes 52 sites with four additional sites expected to be removed by June 1995. Our efforts to screen the tens of thousands of sites whose licenses were previously terminated and which might not have been adequately remediated prior to release years ago continues, and we expect that additional sites will be added to the SDMP program.

RESEARCH

The NRC has in place a research program dealing with a number of issues to ensure that the safety of operating reactors and other NRC-regulated activities is maintained. The primary purpose of performing regulatory research is to develop and provide the Commission and its staff with sound technical bases for regulatory decisions on the safe operation of licensed nuclear reactors and facilities. Research emphasis will be required in the coming years particularly in the following five areas:

(1) Reactor aging research is being conducted to support staff decisions and evaluations of issues related to operating nuclear power plants, license renewal, and future plant designs. Examples of the results of this research include rules and regulatory guides related to pressure vessel integrity, design and maintenance of motor operated valves, and the effects of temperature and radiation on electrical cables. Without this work license renewal would not have been possible.

(2) Research in certain aspects of human factors is an increasingly important element contributing to operational safety. Experience has shown that most safety-related events reported at nuclear facilities involve human performance. To reduce human errors and thereby reduce the risk to the public, the NRC is developing methods to quantify the effects of instrumentation and control system displays on human performance, analyze ways to improve operator performance, and integrate human factors into probabilistic risk assessments.

(3) Research is being performed to improve our probabilistic risk assessment models and risk-based analysis techniques. Our objective is to focus regulatory attention on those areas most important to risk by identifying not only the methods to control risk more effectively, but also those requirements already in place which are ineffective or impose an undue burden on the regulated community without a commensurate reduction in risk.

(4) Research is needed to support NRC staff in certifying the advanced light-water reactors such as General Electric's SBWR and Westinghouse's AP600 which offer new passive safety features.

(5) The high-level waste research program develops methods and data, independent of DOE, to assess the completeness and sufficiency of the ongoing site characterization and design development work being conducted at Yucca Mountain, and ultimately to review DOE's demonstration of compliance with 10 CFR Part 60 and the EPA high-level waste standard. In addition, efforts are underway to establish the technical basis for revising and implementing the decommissioning regulations applicable to nuclear power plants and a variety of other license facilities.

INTERNATIONAL SAFETY ASSISTANCE

In the area of international nuclear safety, we are continuing our participation in a number of safeguards, waste management, and environmental protection activities. We have been actively involved in the past few years in assisting nuclear safety initiatives in Russia, Ukraine, and other Central and Eastern European countries. We are also continuing a variety of cooperative activities with our Western allies and the International Atomic Energy Agency (IAEA) to foster the exchange of nuclear safety-related information through on-going dialogue and joint research projects of mutual interest and benefit. Furthermore, as several Asian countries expand their electric energy sectors, we have begun nuclear safety dialogues to provide safety information and training for regulatory personnel in countries using or contemplating the use of U.S. nuclear technology. Our purpose in offering assistance is to ensure development of a strong and independent effective regulatory environment similar to what we have here in the United States. We believe this effort is important and that countries have found NRC's assistance valuable; however, a serious question of who should pay for these NRC activities arises.

LICENSE FEES

We have continued to meet the requirement of the Omnibus Budget Reconciliation Act of 1990 (OBRA-90) to recover approximately 100 percent of the new budget authority, less the amount appropriated from the Nuclear Waste Fund. For fiscal year 1994, we recovered 97 percent of the budget through fees. As a result, the NRC is not a net contributor to the deficit.

In response to the Energy Policy Act of 1992, the NRC reviewed its policy for assessment of annual charges under OBRA-90 and the need for changes to this policy, and submitted a report on the fee policy review to Congress on February 23, 1994. The report concluded that if major concerns about fairness and equity are to be adequately addressed, OBRA-90 should be modified to change the 100 percent recovery requirement deleting from the fee base the cost of selected activities that amount to approximately 10 percent of the present budget, including certain international activities, oversight and support to the Agreement State program, and the fee exemptions for Federal agencies, for nonprofit educational institutions, and for small entities.

In the absence of a legislative change to the obligation to recover approximately 100 percent of our budget in fees, the Commission, to the extent possible within its authority, is attempting to address the fairness concerns noted in this report. For instance, the Commission will propose changes in the 1995 fee rule to address concerns about stability of fee rates and more equitable distribution of costs which cannot be allocated directly to the beneficiaries of the services. In addition, the Commission has decided to start in FY 1997 to shift certain work which we have traditionally done for other Federal agencies to a reimbursable basis. The cost of such work in fiscal year 1994 was approximately $800,000.

We are pleased that as a result of being a fee recoverable agency, the NRC's budget has been reviewed on its own merits and has been excluded from government-wide reductions. As indicated in the President's budget, we will be proposing an extension of user fee authority through fiscal year 2000.

FISCAL YEAR 1996 BUDGET

Our fiscal year 1996 budget request is $525.8 million. This is essentially a budget held at the FY 1995 level, and is 3 percent less than inflation.

The details of our budget request for fiscal year 1996 have been provided to your Subcommittee. That request is summarized in a chart as an Appendix to this testimony. The attached chart summarizes our budget request in terms of NRC's principal program objectives and illustrates changes to our program requirements.

With this request, we have increased resources for decommissioning, continued funding of our responsibilities for regulating the United States Enrichment Corporation's facilities, made essential improvements in regulating the use of radioactive materials, and reduced current operations and reactor research without compromising our safety responsibilities. Increases in the decommissioning program will be used to evaluate the clean-up of the materials and fuel facilities sites in the site decommissioning management plan, and to screen terminated licenses for additional sites. We are also continuing to assess opportunities to tighten financial operations further while ensuring that our vital health and safety mission is not compromised.

CONCLUSION

In conclusion, the NRC is committed to meeting its responsibilities for the safety of today's operating reactors and other NRC-licensed activities. At the same time we have been able to undertake additional responsibilities and invest in those programs which affect the future -- streamlining the regulatory process, renewing reactor licenses, regulating standard reactor designs, and managing waste disposal, while reducing our budget in real terms. We firmly believe that any further reductions to our budget request could have a significant impact on our ability to ensure public health and safety. We will continue to do all of this in an open manner that facilitates public understanding of our regulatory process.

We greatly appreciate the support for NRC's programs which you have afforded us in the past; we hope to continue to benefit from this support. In the Commission's view, these programs are necessary to ensure effective regulation of an industry which touches virtually every facet of American life.

Mr. Chairman, this concludes my prepared statement. My fellow Commissioners and I will be pleased to answer any questions that you and the Subcommittee may have.

APPENDIX

REFORMING NRC OPERATIONS - COMPLETED AND ONGOING ACTIONS	
COMPLETED ACTIONS	**ONGOING ACTIONS**
Improvements to Reactor Regulation	
Regulations for reactor licensing: Proposed license renewal rule; Final Rule on early site permit, standard design certification, and combined construction permits and operating licenses	Final license renewal rule; Implementation of applications
"Marginal to Safety" Initiative: Process in place to identify, review and revise regulations that provide only marginal safety benefit yet impose significant costs Goal: to eliminate the regulation altogether, or to revise the regulation to eliminate prescriptiveness and incorporate risk-based and performance oriented concepts Identified a number of regulations. During FY 93 and 94 nearly 60% of our final rules involved reduction of burden or added flexibility for licensees such as elimination of reporting requirements and reduction on testing and surveillance requirements. Example: proposed revision to containment leakage testing regulations in which use of risk analysis is used as a means for justifying extension of the containment leak rate test for an industry-wide savings of an estimated $600 to $800M during the lifetime of the facilities.	Incorporating risk-based and performance oriented concepts into specific regulations In FY 95-96 we anticipate approximately 50% of our proposed rules will involve reduction of burden or added flexibility for licensees.

REFORMING NRC OPERATIONS - COMPLETED AND ONGOING ACTIONS	
COMPLETED ACTIONS	**ONGOING ACTIONS**
Use of probabilistic risk assessment (PRA) techniques in development and revision of regulations, operational event assessments, the individual plant examination program, in which all commercial reactor licensees are performing PRAs in order to identify any severe accident vulnerabilities needing attention; review of advance reactor designs, and expedited processing of license amendments that eliminate unnecessary requirements This use of risk assessment has focused licensees' and applicants' attention on evaluating and correcting the significant adverse conditions that are identified and allowed NRC to eliminate unnecessary requirements. Policies and regulations that are risk-based and performance oriented: . Safety Goals Policy Statement . Backfit Rule . Severe Reactor Accident Policy Statement . Anticipated Transient Without Scram Rule . Station Blackout Rule . License Renewal Rule . High-Level and Low-Level Waste Regulations	Enhancing and expanding use of PRA to improve regulatory decisions
Regulatory Review Group reexamination of regulations, processes, programs, and practices Identification of key areas in which substantive burden could be reduced for licensees, staff, or both, without adversely impacting safety at operating plants: enhancing and expanding the uses of PRAs to improve the regulation of operating reactors, revising existing quality assurance program guidance to encourage a graded approach, and revising existing prescriptive regulation in security and fire protection to be more performance-based	Regulatory Review Group implementation of recommendations

REFORMING NRC OPERATIONS - COMPLETED AND ONGOING ACTIONS	
COMPLETED ACTIONS	**ONGOING ACTIONS**
Systematic Assessment of Licensee Performance process (SALP) changes Improves NRC's ability to communicate the results of assessments to the licensees and public, allows NRC to vary regulatory attention to plants based on performance rather than uniform focus across all plants, reduces the burden on superior performers by improving inspection planning and extending the period between SALP assessments	Continuing to assess and adjust, as appropriate, NRC's approach to plant evaluation
Technical Specification Improvement Program eliminates unnecessary license constraints, thereby substantially reducing the regulatory burden on licensees. Standard technical specifications approved by NRC and available for adoption by licensees Two conversions to improved standard technical specifications completed - savings for completed conversions estimated to be between $150K to $1M per unit per year Line item improvement provision exists whereby a licensee may request that only a portion of the standard technical specification be implemented	Conversions of standard technical specifications Line item improvements
Cost beneficial licensing actions process for review in place Approved 49 licensee requests for cost-beneficial licensing actions resulting in an industry lifetime savings of approximately $277 million	Continue to review and approve cost beneficial licensing actions as requested

REFORMING NRC OPERATIONS - COMPLETED AND ONGOING ACTIONS	
COMPLETED ACTIONS	**ONGOING ACTIONS**
Improvements to Nuclear Materials Regulation	
Agreement States Program: NRC discontinued its regulatory authority to allow 29 States to regulate byproduct, source, and certain special nuclear materials	Include additional States Continue to build robust regulatory program with States: Agreement State Compatibility Policy Statement Agreement State pilot performance indicator program
	Reevaluation of the medical use of Atomic Energy Act materials
	Business Process Reengineering being applied to materials licensing process Goal: establish more efficient and potentially automation assisted processing of materials license and amendment requests
	Systematic evaluation of regulations in materials and waste for health and safety focus and consistent level of protection is specified program-wide
Elimination of duplicative EPA/NRC Regulations EPA rescinded air emission standards from commercial mill tailings disposal facilities, and NRC and EPA developed groundwater protection standards at inactive uranium mill tailings sites and agreed on an approach to resolve the need for independent and duplicative EPA reviews of ground water protection actions that are already being reviewed and approved by NRC.	EPA/NRC cooperation to eliminate duplicative regulation EPA and NRC discussing further actions to allow rescission of air emissions standards for other nuclear facilities

REFORMING NRC OPERATIONS - COMPLETED AND ONGOING ACTIONS	
COMPLETED ACTIONS	**ONGOING ACTIONS**
Improvement to Management of NRC	
Labor Management Partnership Committee formation Major Program Office Reorganizations Number of supervisors and managers reduced by 21% from 702 in September 1993 to 554 in January 1995 Supervisor/manager to employee ratio reduced from 1:4 to 1:5 Consolidations of Regions IV and V saves over $9M over the next 5 years Closed Uranium Field Recovery Office saves about $450K annually	Regional Office reorganizations Planned reorganizations will improve supervisor/manager to employee ratio through the end of FY 1999
Procurement Process Reinvention Financial Management Process improvements contributed to NRC's ability to propose $12.7M rescission in FY 94 appropriation and to absorb, without regulatory impact, a $20M reduction to FY 95 budget request	Systematic examination of NRC functions and activities that are most staff intensive and agency processes and procedures most frequently used to reach regulatory decisions with a view to determining whether the function or process is needed and whether it could be accomplished more efficiently
Established a review team for reassessment of the NRC's program for protecting allegers against retaliation Adopted and implemented some of the recommendations including issuance of Policy Statement on Freedom of Nuclear Employees to Raise Safety and Compliance Concerns Without Fear of Retaliation	Comprehensive review of Enforcement Program
Launched agency-wide public responsiveness initiatives Developed public responsiveness improvement plans	Making public responsiveness improvement plans available to the public for comment Implementation

STATEMENT SUBMITTED BY

THE OFFICE OF THE INSPECTOR GENERAL
UNITED STATES NUCLEAR REGULATORY COMMISSION

TO

THE SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT
COMMITTEE ON APPROPRIATIONS
UNITED STATES HOUSE OF REPRESENTATIVES

CONCERNING
THE FISCAL YEAR 1996 BUDGET
FOR
THE OFFICE OF THE INSPECTOR GENERAL

Presented by:
DAVID C. WILLIAMS
INSPECTOR GENERAL

SUBMITTED: March 3, 1995

I am pleased to submit to you our fiscal year (FY) 1996 budget request for the Office of the Inspector General (OIG) of the U.S. Nuclear Regulatory Commission (NRC). The NRC is a regulatory agency, whose mission is to ensure that civilian uses of nuclear materials in the United States are carried out in a way that adequately protects public health and safety, the environment, and national security.

Since the establishment of the OIG in accordance with the Inspector General Act Amendments of 1988, our primary mission is to assist the NRC in operating more effectively and efficiently by identifying ways to improve the agency's programs and operations through the prevention and detection of fraud, waste, and abuse. The OIG also assesses and reports on NRC's efforts to ensure that its safety-related programs are operating effectively. During FY 1996, our office will continue to assist the NRC by evaluating agency programs and investigating potential wrongdoing. We will also continue our proactive role by providing reviews and comments on proposed legislation, regulations, regulatory policies, and directives.

To accomplish this mission, I am requesting $5.5 million dollars, and 44 Full-Time Equivalents. This represents a $420,000 increase over my request last fiscal year. The increased funding is for salaries and benefits adjustments, cost-of-living increases, and contract costs relating to the Chief Financial Officers Act.

In fulfilling OIG's statutory mission during the past year, our office reviewed agency programs, conducted investigations and management focus training, and reviewed many legislative and regulatory proposals. Some of our most significant work occurred in the nuclear reactor safety, enforcement, and research programs. We issued 21 audit reports and reviewed or commented upon over 1,000 proposed legislative changes, regulations, directives, papers, and other regulatory or policy documents. We received 420 allegations of wrongdoing, which resulted in 93 cases being opened for investigation. Last year, we also closed 89 investigations. We project that our FY 1995 audit, investigative, and regulatory review levels will be similar to FY 1994.

I would like to discuss the specific work being undertaken in each of our three principal program areas -- audits, investigations, and regulatory review.

During FY 1994, our audit staff focused primarily on performance and financial audits, as well as on special evaluations. Performance audits seek ways to improve NRC's managerial responsibilities for overseeing the programmatic and administrative functions necessary to carry out the agency's mission. OIG's financial audits review NRC's internal control systems, transaction processing, and financial systems. Special evaluations can be defined as accelerated fact-gathering efforts, narrow in scope, that focus on recognized problems or needs.

The NRC is relatively unique among Federal agencies because the Omnibus Budget Reconciliation Act of 1990 requires the NRC to recover approximately 100 percent of its budget authority through the collection of fees. Therefore, the agency must employ sound financial practices to fully comply with its legislative mandates. Our financial audits assist the agency in meeting these objectives.

To plan and conduct the activities of our audit program, we solicit the views of agency managers, the Congress, private industry, and the public. This approach ensures that the most significant issues are audited. It also fosters a high degree of managerial cooperation and agreement, which results in timely actions to improve the agency's operations. OIG concentrated its efforts during the past year on three major areas of NRC management: (1) improving programs for ensuring safety; (2) identifying opportunities for streamlining and achieving economies; and, (3) continuing enhancements of financial management and administrative functions.

During FY 1994, we issued 19 audit reports that contributed in a variety of ways to improving the agency's operations. Four recently issued reports focused specifically on the key agency programs for ensuring safety. Three of our reports addressed agency policies regarding commercial nuclear power reactors, while the remaining report addressed the agency's policy for allowing the public to petition the Commission to take certain regulatory actions against licensees.

In the first report, we discussed revisions to NRC's enforcement policy, which allows the staff to choose not to enforce an applicable technical specification or license condition under certain circumstances. The policy allows the agency to take no enforcement action against a licensee when NRC staff is clearly satisfied that the action requested by the licensee is temporary, nonrecurring, and involves minimal or no safety impact. Although our audit found that the agency was complying with the policy, OIG identified several opportunities, with which the agency concurred, to improve the administration of the program and further strengthen program management.

We also issued a programmatic report that assessed NRC's revision to its policy and procedures for decommissioning prematurely shutdown nuclear power plants. OIG found that the staff implemented a new policy in accordance with the Commission's criteria. Under the new policy, prematurely shutdown plants can remove major components prior to approval of their decommissioning plan. This represents a significant change in NRC policy that is currently being challenged in the courts.

The third report concerned NRC's process for regulating parts used in nuclear power plants. OIG's audit found that the agency changed its inspection policy for inspecting utilities programs for approving commercial-grade parts used in nuclear power plant safety systems. NRC changed from a programmatic evaluation to a performance-based, reactive-type inspection, however, the agency had not documented and supported this decision. OIG recommended, and the agency agreed, that the NRC should document the basis for the change and then inform the Congress.

OIG's fourth audit report addressed NRC's recent revisions to its policy that allows any individual to file a petition to request that the Commission institute a proceeding to modify, suspend, or revoke a license, or to take any other action that may be proper. OIG's audit found that although the revisions did enhance the process, further clarifications were needed to ensure that petitioners understood the policy and had other means through which to communicate with the Commission. The agency agreed with OIG's recommendations to better inform the public of the intent and administration of the process.

In the area of streamlining and economy, OIG's audit of NRC's research program resulted in improvements to the management process. Our audit concentrated on how the many projects that make up the research program are integrated and coordinated between the staff that applies the research to support the agency's regulatory mission and the staff that oversees the development of the research program. OIG's efforts in this area resulted in improvements needed in the management process for ensuring that NRC's research program meets the regulatory needs of the agency.

OIG's efforts in the area of financial management continue to ensure that the agency complies with Federal statutes and guidance and that the agency's system of internal accounting and administrative controls are implemented and effective. OIG's review of the agency's compliance with the requirements of the Federal Managers' Financial Integrity Act indicates continuous financial management improvement.

In another equally important area, the agency is making continuous progress and improvements to its financial management systems, which form the basis for the preparation of annual financial statements, as required by the Chief Financial Officers Act. Because of this cooperative effort, NRC was one of the few agencies that produced an audited financial statement on time.

Next, I would like to turn to our investigative program. The OIG investigative program is responsible for conducting investigations and special-event inquiries. We investigate violations of law or misconduct by NRC employees and contractors, and allegations of irregularities or abuse involving agency programs and operations. Special-event inquiries examine the cause of critical events, rather than individual misconduct.

During this past year, our investigative staff also made some significant contributions to the agency's programs and operations. For example, our work on the Thermo-Lag fire-barrier material continues to be highly significant. Thermo-Lag is used in most nuclear plants to protect safety and emergency shutdown electrical circuits from fire. As reported previously, our inspection determined that the NRC staff did not conduct an adequate review of fire endurance concerning the ability of Thermo-Lag.

In April 1994, Industrial Testing Laboratories, Inc. (ITL) and its President pleaded guilty in U.S. District Court in Baltimore, Maryland to five counts of aiding and abetting the making of false statements within the jurisdiction of the NRC. Thermal Science Incorporated (TSI), the manufacturer of Thermo-Lag, used ITL to witness the tests that were used to demonstrate to the NRC that Thermo-Lag met 10 CFR Part 50 requirements.

In September 1994, a special Federal grand jury returned a seven-count indictment against TSI and its President. The charges included conspiracy, false statements, and Atomic Energy Act violations in connection with the sale to nuclear utilities of more than $58 million of Thermo-Lag that was subsequently installed in over 70 nuclear power plants.

Another OIG investigation involved allegations that members of an advisory committee to the Commission were abusing the NRC's expense reimbursement process. OIG conducted investigations into questionable claims submitted by two members. We determined that one member submitted claims in excess of $34,000 for the cost of secretarial services provided by his spouse. Under the false claims statutes, we investigated an allegation that a second committee member was improperly reimbursed for office rental expenses and for the cost of secretarial services provided by his spouse. The second member resigned as a result of the investigation and the matter is currently under review by the Public Integrity Section of the Department of Justice.

Another investigation was opened to address allegations that two NRC employees abused the payroll system by receiving payment for overtime that was not worked. OIG determined that the two employees received payments in excess of $135,000 for fraudulent overtime claims. This theft was accomplished by adding hours to timecards after they were signed by a manager, or by forging the signature of an overtime certifying and approving official. This matter is currently under review by the U.S. Attorney's Office in Baltimore, Maryland.

At the request of the NRC Chairman, we conducted a separate review to provide the Commission with an understanding as to why various NRC managers failed to detect the overtime fraud. OIG determined that some of the managers were not aware of security measures in the payroll system designed to prevent fraud: whereas, others did not fully understand their responsibilities with respect to recording and verifying time and attendance.

Finally, I would like to address the results of our legislative and regulatory review initiatives. During 1994, the OIG continued to enhance its regulatory review program. For example, we reviewed over a dozen bills introduced by Congress, 50 proposed regulations, 320 Commission papers, and numerous management directives and other regulatory or policy documents originating within NRC. This work resulted in a variety of substantive and procedural recommendations to NRC management.

In March 1994, the OIG commented on proposed amendments to NRC regulations pertaining to the release of patients from medical facilities who have been administered radioactive material. The proposed change in the regulation would, in some cases, permit the release of a patient who previously was required to remain hospitalized because of radioactivity.

Our concern with the staff's proposal included the credibility of the staff's analysis and the validity of information based on public comments from biased sources. The medical community was in favor of the amendment because it would reduce potential radiation exposure to medical personnel, as well as free hospital beds for other treatments. The alternative, increased radiation exposure to individuals outside medical facilities, was not fully examined. While the proposed change to NRC regulations might not significantly affect health and safety, the staff's recommendation and analysis could have been more thoroughly supported. In response to our comments, the NRC staff provided both OIG and the Commission with clarifying information.

We also commented on the directive entitled, "NRC Medical Event Assessment Program." The OIG recommended changes to ensure that decisions were made at the appropriate level. In addition, we recommended clarifying ambiguous language that addressed the Government's acceptance of liability pertaining to negligent acts of medical consultants.

The OIG also commented on the small and disadvantaged businesses (SDB) draft directive. To increase SDB contract opportunities, the agency recommended dividing acquisitions into several parts. We noted that the policy language could inadvertently support the inappropriate splitting of contract requirements. To remedy this, we suggested additional language to clarify appropriate methods for dividing requirements. In response to our comments and remarks from the Office of General Counsel, the directive was revised and published with clearer definitions.

My office also provided significant input to the agency during the drafting process of its brochure on Sexual Harassment. Our comments focussed on issues involving confidentiality in processing complaints, particularly with regard to cases referred to the Inspector General. In addition, we provided the agency with substantive information on alternative disputes resolution procedures.

This concludes my report to you on our activities and achievements during the past year. We look forward to continuing to work with the agency to assist in carrying out NRC's important health and safety mission. Thank you for the opportunity to discuss our programs.

NUREG-1100
Volume 11

BUDGET ESTIMATES
FISCAL YEARS 1996-1997

February 1995

U.S. Nuclear Regulatory Commission

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SUMMARY

INTRODUCTION

The U.S. Congress has determined that the safe use of nuclear materials for peaceful purposes is a legitimate and important national goal. It has entrusted the NRC with the primary Federal responsibility for achieving that goal. The NRC's mission, therefore, is to ensure adequate protection for the public health and safety, the common defense and security, and the environment in the use of nuclear materials in the United States.

The NRC's scope of responsibility includes regulation of commercial nuclear power plants; research, test, and training reactors; fuel cycle facilities; medical, academic, and industrial uses of nuclear materials; and the transport, storage, and disposal of nuclear materials and wastes. The NRC carries out its mission by setting standards and requirements that licensees must meet to design, construct, and operate safe facilities, in the form of rules, license conditions, and regulatory guidance; inspecting facilities and taking enforcement action, as necessary, to ensure that such standards are followed; and conducting research to support, confirm, or refine judgments used in regulatory decisions. The technologies involved in the use of nuclear energy are relatively new and complex. Regulatory decisions often require conservatism to account for technical uncertainty. Conservatisms should be modified appropriately as increased understanding of physical phenomena and interactions is achieved. Further, essential functions must be maintained through appropriate combinations of high component and system reliability, redundancy, and diversity to provide multiple barriers to the release of radiation (defense-in-depth).

ALL DOLLAR AMOUNTS IN THIS DOCUMENT REPRESENT BUDGET AUTHORITY ENACTED FOR FY 1994 AND FY 1995, REQUESTED FOR FY 1996 AND ESTIMATED FOR FY 1997.

BUDGET SUMMARY

(Dollar amounts in tables represent thousands of dollars ($K). In text, whole dollar amounts are used. Staff numbers represent full-time equivalents (FTEs).)

FUNDS: The Nuclear Regulatory Commission's (NRC's) Fiscal Year (FY) 1996 budget request is $525,800,000. This is an increase of $219,000 above FY 1995. The NRC's FY 1997 planning estimate is $510,000,000. This is a decrease of $15,800,000 below FY 1996. This represents a 3 percent reduction from the FY 1996 request. The FY 1997 reduction has been applied equally to all programs in this document. The agency will conduct a further review of the allocation of this reduction. Any redistribution among programs will be provided with the FY 1997 budget request.

FTE: The NRC's FY 1996 budget request is 3,185 FTEs. This is a decrease of 33 FTEs below the FY 1995 level. The planning estimate for FY 1997 is 3,144 FTEs. This is a decrease of 41 FTEs below FY 1996.

TOTAL NRC BUDGET AUTHORITY BY APPROPRIATIONS

			FY 1996 Estimate		FY 1997 Estimate	
	FY 1994 Enacted	FY 1995 Enacted	Request	Change from FY 1995	Planning Estimate	Change from FY 1996
NRC Salaries and Expenses (S&E) Appropriations ($K)						
Salaries and Expenses	530,200	520,501	520,300	-201	504,300	-16,000
Offsetting Fees Receipts	508,200	498,501	498,300	-201	482,300	-16,000
Net Appropriated - S&E[1]	22,000	22,000	22,000	0	22,000	0
NRC Office of Inspector General (IG) Appropriations ($K)						
Inspector General	4,800	5,080	5,500	420	5,700	200
Offsetting Fees Receipts	4,800	5,080	5,500	420	5,700	200
Net Appropriated - IG	0	0	0	0	0	0
Total Net Appropriated - NRC	22,000	22,000	22,000	0	22,000	0

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[1] Appropriated from the Nuclear Waste Fund.

APPROPRIATIONS AND FINANCIAL SUMMARY

The NRC's FY 1996 budget requests new budget authority of $525,800,000, to be funded by two appropriations -- one is NRC's Salaries and Expenses appropriation for $520,300,000, and the other is NRC's Office of the Inspector General appropriation for $5,500,000. Of the funds appropriated to the NRC's Salaries and Expenses, $22,000,000, shall be derived from the Nuclear Waste Fund. The sums appropriated to the NRC's Salaries and Expenses and NRC's Office of the Inspector General shall be reduced by the amount of revenues received during FY 1996 from licensing fees, inspection services, and other services and collections, so as to result in a final FY 1996 appropriations for the NRC at an estimated $22,000,000 -- the amount appropriated from the Nuclear Waste Fund. Revenues derived from enforcement actions will be deposited to miscellaneous receipts of the Treasury.

The NRC's FY 1996 appropriations legislation and its accompanying analysis are provided on pages 4 through 14 of this section. This section also provides summaries for budget authority by function and by program, a summary of staffing by program, changes in budget authority by program, an explanation of resource changes for current services and program requirements and the NRC's performance measures and goals. The detailed justifications for direct program activities are presented on pages 36 through 169. It should be noted that the contract funds related to the reimbursable program are not financed by NRC's appropriated funds, but solely through reimbursable agreements with other Federal agencies and non-Federal entities.

SUMMARY

PROPOSED FY 1996 APPROPRIATIONS LEGISLATION

The proposed appropriations legislation is as follows:

Salaries and Expenses

For necessary expenses of the Commission in carrying out the purposes of the Energy Reorganization Act of 1974, as amended, and the Atomic Energy Act of 1954, as amended, including the employment of aliens; services authorized by section 3109 of title 5, United States Code; publication and dissemination of atomic information; purchase, repair, and cleaning of uniforms; official representation expenses (not to exceed $20,000); reimbursements to the General Services Administration for security guard services; hire of passenger motor vehicles and aircraft; $520,300,000, to remain available until expended, of which $22,000,000 shall be derived from the Nuclear Waste Fund: Provided, That from this appropriation, transfers of sums may be made to other agencies of the Government for the performance of the work for which this appropriation is made, and in such cases the sums so transferred may be merged with the appropriation to which transferred: Provided further, That moneys received by the Commission for the cooperative nuclear safety research program, services rendered to foreign governments and international organizations, and the material and information access authorization programs, including criminal history checks under section 149 of the Atomic Energy Act of 1954, as amended, may be retained and used for salaries and expenses associated with those activities, notwithstanding the provisions of section 3302 of title 31, United States Code, and shall remain available until expended: Provided further, That revenues from licensing fees, inspection services, and other services and collections shall be retained and used for necessary salaries and expenses in this account, notwithstanding the provisions of section 3302 of title 31, United States Code, and shall remain available until expended: Provided further, That the sum herein appropriated shall be reduced by the amount of revenues received during fiscal year 1996 from licensing fees, inspection services, and other services and collections, excluding those moneys received for the cooperative nuclear safety research program, services rendered to foreign governments and international organizations, and the material and information access authorization programs, so as to result in a final fiscal year 1996 appropriation estimated at not more than $22,000,000.

Office of the Inspector General

For necessary expenses of the Office of the Inspector General in carrying out the provisions of the Inspector General Act of 1978, as amended, including services authorized by section 3109 of title 5, United States Code, $5,500,000, to remain available until expended; and in addition, an amount not to exceed 5 percent of this sum may be transferred from Salaries and Expenses, Nuclear Regulatory Commission: Provided, That notice of such transfers shall be given to the Committees on Appropriations of the House and Senate: Provided further, That from this appropriation, transfers of sums may be made to other agencies of the Government for the performance of work for which this appropriation is made, and in such cases the sums so transferred may be merged with the appropriation to which transferred: Provided further, That revenues from licensing fees, inspection services, and other services and collections shall be retained and used for necessary salaries and expenses in this account, notwithstanding the provisions of section 3302 of title 31, United States Code, and shall remain available until expended: Provided further, That the sum herein appropriated shall be reduced by the amount of revenues received during fiscal year 1996 from licensing fees, inspection services, and other services and collections, so as to result in a final fiscal year 1996 appropriation estimated at not more than $0.

SUMMARY

ANALYSIS OF PROPOSED FY 1996 APPROPRIATIONS LEGISLATION

The analysis of the proposed appropriations legislation is as follows:

Salaries and Expenses

1. FOR NECESSARY EXPENSES OF THE COMMISSION IN CARRYING OUT THE PURPOSES OF THE ENERGY REORGANIZATION ACT OF 1974, AS AMENDED, AND THE ATOMIC ENERGY ACT OF 1954, AS AMENDED:

   42 U.S.C. 5841 et. seq.

   The Nuclear Regulatory Commission (NRC) was established by the Energy Reorganization Act of 1974, as amended, (42 U.S.C. 5801 et seq). This Act abolished the Atomic Energy Commission and by section 201 (42 U.S.C 5841), transferred to the NRC all the licensing and related regulatory functions of the Atomic Energy Commission . These functions included those of the Atomic Safety and Licensing Board Panel; the Advisory Committee on Reactor Safeguards; responsibilities for licensing and regulating nuclear facilities and materials; and conducting research for the purpose of confirmatory assessment related to licensing and other regulation, and other activities, including research related to nuclear material safety and regulation under the provisions of the Atomic Energy Act of 1954, as amended (42 U.S.C. 2011 et seq).

2. EMPLOYMENT OF ALIENS:

   42 U.S.C. 2201(d)

   42 U.S.C. 2201(d) of the Atomic Energy Act of 1954, as amended, authorizes the Commission to employ persons and fix their compensation without regard to civil service laws.

3. SERVICES AUTHORIZED BY 5 U.S.C. 3109:

   5 U.S.C. 3109 provides in part that the head of an agency may procure by contract the temporary or intermittent services of experts or consultants when authorized by an appropriation.

4. PUBLICATION AND DISSEMINATION OF ATOMIC INFORMATION:

42 U.S.C. 2161(b)

42 U.S.C. 2161(b) directs that the Commission shall be guided by the principle that the dissemination of scientific and technical information related to atomic energy should be permitted and encouraged so as to provide that interchange of ideas and criticism which is essential to scientific and industrial progress and public understanding and to enlarge the fund of technical information.

5. PURCHASE, REPAIR, AND CLEANING OF UNIFORMS:

5 U.S.C. 5901

5 U.S.C. 5901 authorizes the annual appropriation of funds to each agency of the Government as a uniform allowance.

6. OFFICIAL REPRESENTATION EXPENSES:

47 Comp. Gen. 657

43 Comp. Gen. 305

This language is required because of the established rule restricting an agency from charging appropriations with the cost of official representation unless the appropriations involved are specifically available therefor. Congress has appropriated funds for official representation expenses to the NRC and NRC's predecessor, the Atomic Energy Commission, each year since FY 1950.

7. REIMBURSEMENTS TO THE GENERAL SERVICES ADMINISTRATION FOR SECURITY GUARD SERVICES:

34 Comp Gen. 42

This language is required because, under the provisions of the Federal Property and Administrative Services Act of 1949, specific appropriation is made to the General Services Administration for carrying out the function of protecting public buildings and property and, therefore, NRC appropriations not specifically made available therefor may not be used to reimburse the General Services Administration for security guard services.

8. HIRE OF PASSENGER MOTOR VEHICLES AND AIRCRAFT:

31 U.S.C. 1343

31 U.S.C. 1343 provides in effect that unless specifically authorized by the appropriation concerned or other law, no appropriation shall be expended to purchase or hire passenger motor vehicles for any branch of the Government.

9. TO REMAIN AVAILABLE UNTIL EXPENDED:

31 U.S.C. 1301

31 U.S.C. 1301 provides in part that no regular, annual appropriation shall be construed to be permanent or available continuously unless the appropriation expressly provides that it is available after the fiscal year covered by the law in which it appears.

10. SHALL BE DERIVED FROM THE NUCLEAR WASTE FUND:

41 U.S.C. 10131(b)(4)

42 U.S.C. 10222(a)(4)

41 U.S.C. 10131(b)(4) provides for the establishment of a Nuclear Waste Fund to ensure that the costs of carrying out activities relating to the disposal of high-level radioactive waste and spent nuclear fuel will be borne by the persons responsible for generating such waste and spent fuel.

42 U.S.C. 10222(a)(4) provides that the amounts paid by generators and owners of these materials into the fund is reviewed annually to determine if any fee adjustment is needed to insure full cost recovery.

42 U.S.C. 10134

42 U.S.C. 10133

42 U.S.C. 10134 specifically requires the NRC to license a repository for the disposal of high-level radioactive waste and spent nuclear fuel and sets forth certain licensing procedures. 42 U.S.C. 10133 also assigns review responsibilities to the NRC in the steps leading to submission of the license application. Thus, the Nuclear Waste

Policy Act of 1982, as amended, establishes NRC's responsibility throughout the repository siting process, culminating in the requirement for NRC licensing as a prerequisite to construction and operation of the repository.

42 U.S.C. 10222(d)

42 U.S.C. 10222(d) specifies that expenditures from the Nuclear Waste Fund can be used for purposes of radioactive waste disposal activities, including identification, development, licensing, construction, operation, decommissioning, and post-decommissioning maintenance and monitoring of any repository constructed under the Nuclear Waste Policy Act of 1982, and administrative cost of the radioactive waste disposal program.

11. FROM THIS APPROPRIATION, TRANSFERS OF SUMS MAY BE MADE TO OTHER AGENCIES OF THE GOVERNMENT FOR THE PERFORMANCE OF WORK FOR WHICH THIS APPROPRIATION IS MADE, AND IN SUCH CASES THE SUMS SO TRANSFERRED MAY BE MERGED WITH THE APPROPRIATION TO WHICH TRANSFERRED:

31 U.S.C. 1532

31 U.S.C. 1532 permits the transfer of appropriated funds from one account to another or to a working fund only when authorized by law.

12. MONEYS RECEIVED BY THE COMMISSION FOR THE COOPERATIVE NUCLEAR SAFETY RESEARCH PROGRAM, SERVICES RENDERED TO FOREIGN GOVERNMENTS AND INTERNATIONAL ORGANIZATIONS, AND THE MATERIAL AND INFORMATION ACCESS AUTHORIZATION PROGRAMS, INCLUDING CRIMINAL HISTORY CHECKS UNDER SECTION 149 OF THE ATOMIC ENERGY ACT OF 1954, AS AMENDED, MAY BE RETAINED AND USED FOR SALARIES AND EXPENSES ASSOCIATED WITH THOSE ACTIVITIES, NOTWITHSTANDING THE PROVISIONS OF SECTION 3302 OF TITLE 31, UNITED STATES CODE, AND SHALL REMAIN AVAILABLE UNTIL EXPENDED:

31 U.S.C. 3302

2 Comp. Gen. 775

Appropriated funds may not be augmented with funds from other sources unless specifically authorized by law. Under the cooperative nuclear safety research program, funds are received from domestic entities, foreign governments, and international organizations for their participation in NRC's reactor safety research experiments. The NRC is authorized to receive directly, compensation from foreign governments and international organizations for providing safety assistance and other services related to promoting the public health and safety. Funds are also received in the form of fees from licensees for the cost of security investigations and related processing associated with access to formula quantities of special nuclear material. These funds will be used to pay the related NRC processing costs and the agency performing the security investigations. Pursuant to P.L. 99-399, section 606, funds will be received in the form of fees from licensees for the cost of fingerprint examinations and criminal history checks of each individual granted access to safeguards information or unescorted access to a nuclear power plant. These funds will be used to pay for processing and performing the fingerprint examinations and criminal history checks. NRC will also use the money currently collected under 10 CFR Part 25 to pay the NRC processing costs and the Office of Personnel Management for conducting background investigations used as a basis for NRC security clearances for designated licensee representatives and other personnel requiring access to classified information.

13. REVENUES FROM LICENSING FEES, INSPECTION SERVICES, AND OTHER SERVICES AND COLLECTIONS SHALL BE RETAINED AND USED FOR NECESSARY SALARIES AND EXPENSES IN THIS ACCOUNT, NOTWITHSTANDING THE PROVISIONS OF SECTION 3302 OF TITLE 31, UNITED STATES CODE, AND SHALL REMAIN AVAILABLE UNTIL EXPENDED:

31 U.S.C. 9701

The NRC is authorized under Title V of the Independent Offices Appropriation Act of 1952 to collect license fees. Pursuant to 31 U.S.C. 9701, any person who receives a service or thing of value from the Commission shall pay fees to cover the NRC's cost in providing such service or thing of value.

42 U.S.C. 2213

42 U.S.C. 2214

Pursuant to 42 U.S.C. 2213, the NRC shall assess and collect annual charges from persons licensed by the Commission. 42 U.S.C. 2214 (P.L. 101-508, Title VI, Subtitle B, of the Omnibus Budget Reconciliation Act of 1990; and P. L. 102-486, Title XXIX, section 2903 of the Energy Policy Act of 1992) requires, except for the holder of any license for a federally owned research reactor used primarily for educational training and academic research purposes, the Commission to assess and collect annual charges from persons licensed by the Commission that approximate 100 percent of the Commission's budget authority, less any amount appropriated to the Commission from the Nuclear Waste Fund and the amount of fees collected under the Independent Offices Appropriation Act of 1952 (31 U.S.C. 9701), for each year of FY 1991-1998.

31 U.S.C. 3302

The NRC is required to deposit all revenues collected to miscellaneous receipts of the Treasury unless specifically authorized by an appropriation to retain and use such revenue.

14. THE SUM HEREIN APPROPRIATED SHALL BE REDUCED BY THE AMOUNT OF REVENUES RECEIVED FROM LICENSING FEES, INSPECTION SERVICES, AND OTHER SERVICES AND COLLECTIONS, EXCLUDING THOSE MONEYS RECEIVED FOR THE COOPERATIVE NUCLEAR SAFETY RESEARCH PROGRAM, SERVICES RENDERED TO FOREIGN GOVERNMENTS AND INTERNATIONAL ORGANIZATIONS, AND THE MATERIAL AND INFORMATION ACCESS AUTHORIZATION PROGRAMS:

42 U.S.C 2214

The total fees to be collected in FY 1996 are to approximate 100 percent of the Commission's budget authority. Pursuant to 42 U.S.C 2214 (P.L. 101-508, Title VI, Subtitle B, section 6101 (a)(2)(3) and (c)(2)), the aggregate amount of the annual charge collected from all licensees shall equal an amount that approximates 100 percent of the budget authority of the Commission in the fiscal year in which such charge is collected, less any amount appropriated to the Commission from the Nuclear Waste Fund and the amount of fees collected under the Independent Offices Appropriation Act of 1952 (31 U.S.C. 9701), for each year of FY 1991-1998.

Office of the Inspector General

15. FOR NECESSARY EXPENSES OF THE OFFICE OF THE INSPECTOR GENERAL IN CARRYING OUT THE PROVISIONS OF THE INSPECTOR GENERAL ACT OF 1978, AS AMENDED:

    P.L. 95-452

    P.L. 100-504

    P.L. 100-504 amended P.L. 95-452 to establish the Office of the Inspector General within the NRC effective April 17, 1989, and to require the establishment of a separate appropriation account to fund the Office of the Inspector General.

16. SERVICES AUTHORIZED BY 5 U.S.C. 3109:

    5 U.S.C. 3109 provides in part that the head of an agency may procure by contract the temporary or intermittent services of experts or consultants when authorized by an appropriation.

17. TO REMAIN AVAILABLE UNTIL EXPENDED:

    31 U.S.C. 1301

    31 U.S.C. 1301 provides in part that no regular, annual appropriation shall be construed to be permanent or available continuously unless the appropriation expressly provides that it is available after the fiscal year covered by the law in which it appears.

18. AN AMOUNT NOT TO EXCEED 5-PERCENT OF THIS SUM MAY BE TRANSFERRED FROM SALARIES AND EXPENSES, NUCLEAR REGULATORY COMMISSION: PROVIDED, THAT NOTICE OF SUCH TRANSFERS SHALL BE GIVEN TO THE COMMITTEES ON APPROPRIATIONS OF THE HOUSE AND SENATE:

    31 U.S.C. 1301

    31 U.S.C. 1301 prohibits the transfer of funds between appropriations without specific statutory authority. This language provides for limited transfer authority from NRC's Salaries and Expenses appropriation to its Office of the Inspector General

appropriation. This will permit the NRC to augment the Office of the Inspector General appropriation on a limited basis, if it becomes necessary, without seeking additional appropriations for that fiscal year.

19. FROM THIS APPROPRIATION, TRANSFERS OF SUMS MAY BE MADE TO OTHER AGENCIES OF THE GOVERNMENT FOR THE PERFORMANCE OF WORK FOR WHICH THIS APPROPRIATION IS MADE, AND IN SUCH CASES THE SUMS SO TRANSFERRED MAY BE MERGED WITH THE APPROPRIATION TO WHICH TRANSFERRED:

    31 U.S.C. 1532

    31 U.S.C. 1532 permits the transfer of appropriated funds from one account to another or to a working fund only when authorized by law.

20. REVENUES FROM LICENSING FEES, INSPECTION SERVICES, AND OTHER SERVICES AND COLLECTIONS SHALL BE RETAINED AND USED FOR NECESSARY SALARIES AND EXPENSES IN THIS ACCOUNT, NOTWITHSTANDING THE PROVISIONS OF SECTION 3302 OF TITLE 31, UNITED STATES CODE, AND SHALL REMAIN AVAILABLE UNTIL EXPENDED:

    31 U.S.C. 9701

    The NRC is authorized under Title V of the Independent Offices Appropriation Act of 1952 to collect license fees. Pursuant to 31 U.S.C. 9701, any person who receives a service or thing of value from the Commission shall pay fees to cover the NRC's cost in providing such service or thing of value.

    42 U.S.C. 2213

    42 U.S.C 2214

    Pursuant to 42 U.S.C. 2213, the NRC shall assess and collect annual charges from persons licensed by the Commission. 42 U.S.C. 2214 (P.L. 101-508, Title VI, Subtitle B, of the Omnibus Budget Reconciliation Act of 1990; and P. L. 102-486, Title XXIX, section 2903 of the Energy Policy Act of 1992) requires, except for the holder of any license for a federally owned research reactor used primarily for educational training and academic research purposes, the Commission to assess and collect annual charges from persons licensed by the Commission that approximate

100 percent of the Commission's budget authority, less any amount appropriated to the Commission from the Nuclear Waste Fund and the amount of fees collected under the Independent Offices Appropriation Act of 1952 (31 U.S.C. 9701), for each year of FY 1991-1998.

The NRC is required to deposit all revenues collected to miscellaneous receipts of the Treasury unless specifically authorized by an appropriation to retain and use such revenue.

21. THE SUM HEREIN APPROPRIATED SHALL BE REDUCED BY THE AMOUNT OF REVENUES RECEIVED FROM LICENSING FEES, INSPECTION SERVICES, AND OTHER SERVICES AND COLLECTIONS:

42 U.S.C. 2214

The total fees to be collected in FY 1996 are to approximate 100 percent of the Commission's budget authority. Pursuant to 42 U.S.C 2214 (P.L. 101-508, Title VI, Subtitle B, section 6101 (a)(2)(3) and (c)(2)), the aggregate amount of the annual charge collected from all licensees shall equal an amount that approximates 100 percent of the budget authority of the Commission in the fiscal year in which such charge is collected, less any amount appropriated to the Commission from the Nuclear Waste Fund and the amount of fees collected under the Independent Offices Appropriation Act of 1952 (31 U.S.C. 9701), for each year of FY 1991-1998.

SUMMARY

SUMMARY OF BUDGET AUTHORITY BY FUNCTION

			FY 1996 Estimate		FY 1997 Estimate	
	FY 1994 Enacted	FY 1995 Enacted	Request	Change from FY 1995	Planning Estimate	Change from FY 1996
NRC Appropriation: Salaries and Expenses (S&E) ($K)						
Salaries and Benefits	261,406	255,195	260,140	4,945	252,032	-8,108
Contract Support	252,720	249,044	244,114	-4,930	236,666	-7,448
Travel	16,074	16,262	16,046	-216	15,602	-444
Total (S&E)	530,200	520,501	520,300	-201	504,300	-16,000
NRC Appropriation: Office of Inspector General (IG) ($K)						
Salaries and Benefits	3,933	4,192	4,507	315	4,651	144
Contract Support	662	653	751	98	800	49
Travel	205	235	242	7	249	7
Total (IG)	4,800	5,080	5,500	420	5,700	200
Total NRC Budget Authority by Function ($K)						
Salaries and Benefits	265,339	259,387	264,647	5,260	256,683	-7,964
Contract Support	253,382	249,697	244,865	-4,832	237,466	-7,399
Travel	16,279	16,497	16,288	-209	15,851	-437
Total NRC	535,000	525,581	525,800	219	510,000	-15,800

SUMMARY OF STAFFING BY PROGRAM AND BY COST CENTER

	FY 1994 FTE	FY 1995 FTE	FY 1996 Estimate		FY 1997 Estimate	
			FTE Request	Change from FY 1995	FTE Request	Change from FY 1996
Reactor Program by Cost Center						
Reactor Regulation	1,651	1,608	1,581	-27	1,574	-7
Standard Reactor Designs	192	176	169	-7	145	-24
Test and Research Reactors	14	15	15	0	15	0
Subtotal	1,857	1,799	1,765	-34	1,734	-31
Nuclear Materials and Nuclear Waste Program by Cost Center						
Fuel Facilities	108	109	106	-3	105	-1
Materials Users	241	238	241	3	236	-5
Low-Level Waste and Decommissioning	109	116	115	-1	116	1
Other Nuclear Materials and Waste Activities	68	69	68	-1	69	1
High-Level Waste	70	59	60	1	60	0
Subtotal	596	591	590	-1	586	-4
Management and Support Program by Cost Center						
Policy and Direction	187	178	178	0	178	0
Resource and Administration	519	510	508	-2	502	-6
Special Technical Programs	91	96	100	4	100	0
Subtotal	797	784	786	2	780	-6
Inspector General Program	43	44	44	0	44	0
Total NRC	3,293	3,218	3,185	-33	3,144	-41

SUMMARY

SUMMARY OF BUDGET AUTHORITY BY PROGRAM AND BY COST CENTER

			FY 1996 Estimate		FY 1997 Estimate	
	FY 1994 Enacted	FY 1995 Enacted	Request	Change from FY 1995	Planning Estimate	Change from FY 1996
Reactor Program by Cost Center						
Reactor Regulation	235,955	228,922	225,661	-3,261	220,622	-5,039
Standard Reactor Designs	42,314	37,852	34,933	-2,919	31,476	-3,457
Test and Research Reactors	1,969	2,018	2,078	60	2,032	-46
Subtotal	280,238	268,792	262,672	-6,120	254,130	-8,542
Nuclear Materials and Nuclear Waste Program by Cost Center						
Fuel Facilities	13,235	11,748	11,506	-242	11,674	168
Materials Users	26,424	27,551	28,372	821	27,545	-827
Low-Level Waste and Decommissioning	19,986	19,527	21,535	2,008	20,678	-857
Other Nuclear Materials and Waste Activities	6,981	7,326	7,437	111	7,385	-52
High-Level Waste	22,000	22,000	22,000	0	22,000	0
Subtotal	88,626	88,152	90,850	2,698	89,282	-1,568
Management and Support Program by Cost Center						
Policy and Direction	18,688	17,862	18,323	461	17,954	-369
Resource and Administration	129,689	131,224	132,137	913	127,792	-4,345
Special Technical Programs	12,959	14,471	16,318	1,847	15,142	-1,176
Subtotal	161,336	163,557	166,778	3,221	160,888	-5,890
Inspector General Program	4,800	5,080	5,500	420	5,700	200
Total NRC	535,000	525,581	525,800	219	510,000	-15,800

SUMMARY

CHANGES IN BUDGET AUTHORITY BY PROGRAM AND COST CENTER

Program	FY 1996 Change from FY 1995			FY 1997 Change from FY 1996
	Current Services[1]	Program Requirements[2]	Total	Total
Reactor Program by Cost Center				
Reactor Regulation	6,600	-9,861	-3,261	-5,039
Standard Reactor Designs	999	-3,918	-2,919	-3,457
Test and Research Reactors	60	0	60	-46
Subtotal	7,659	-13,779	-6,120	-8,542
Nuclear Materials and Nuclear Waste Program by Cost Center				
Fuel Facilities	346	-588	-242	168
Materials Users	836	-15	821	-827
Low-Level Waste and Decommissioning	615	1,393	2,008	-857
Other Nuclear Materials and Waste Activities	191	-80	111	-52
High-Level Waste	523	-523	0	0
Subtotal	2,511	187	2,698	-1,568
Management and Support Program by Cost Center				
Policy and Direction	541	-80	461	-369
Resource and Administration	4,268	-3,355	913	-4,345
Special Technical Programs	444	1,403	1,847	-1,176
Subtotal	5,253	-2,032	3,221	-5,890
Inspector General Program	343	77	420	200
Total NRC	15,766	-15,547	219	-15,800

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[1] Current Services: These estimates show how projected price increases affect agency funding requirements in FY 1996.

[2] Program Requirements: These estimates show how the actual program funding requirements change from FY 1995 to FY 1996.

SUMMARY

EXPLANATION OF RESOURCE CHANGES FOR CURRENT SERVICES

Personnel Compensation

FY 1996 Change From FY 1995 . . . . $7,972,000

The change for current services reflects (1) increases in personnel compensation of 2.0 percent general raise plus 1.21 percent locality raise expected in calendar year (CY) 1995, 2.4 percent expected in CY 1996, within-grade increases, and several minor adjustments, such as the varying number of paydays, the increased number of staff in the Federal Employees Retirement System, and the increased cost of benefits. (Note: Fluctuations due to staffing changes are included in the description of the program requirements.)

Administrative Price Increases

FY 1996 Change From FY 1995 . . . . $7,794,000

The increase for contract support and travel reflects inflation estimated at 3.0 percent in FY 1996. Additionally, there is approximately $900,000 in rent increases primarily due to an estimated 4.5 percent increase in rent charges for office space each year from GSA for headquarters rent. These administrative price increases are summarized in the following table:

Administrative Price Increases	FY 1996 Change from FY 1995 ($K)
Contract Support	6,476
Travel	443
Rent	875
Total	7,794

SUMMARY

EXPLANATION OF RESOURCE CHANGES FOR PROGRAM REQUIREMENTS

Reactor Program

FY 1996 Change From FY 1995 ....-$13,779,000

The program decrease in FY 1996 reflects (1) resolution of outstanding severe-accident safety issues, (2) completion of the aging studies on electrical and mechanical components conducted under the Nuclear Plant Aging Research Program, (3) licensing of Watts Bar Unit 1, (4) completion of the technical reviews in the design certification process for the General Electric ABWR and Combustion Engineering System 80+ standard reactor designs, (5) completion of major efforts to support the revision of the Standard Review Plan for future reactor designs, (6) completion of modifications for the ROSA-V facility that will be used to validate systems performance for the Westinghouse AP600 design, and (7) agency reorganization and streamlining efforts.

Nuclear Materials and Nuclear Waste Program

FY 1996 Change From FY 1995 .... $187,000

The program increase in FY 1996 reflects increasing decommissioning efforts to conduct (1) radiological assessments of formerly licensed sites; (2) reviews of license files terminated prior to 1965; (3) confirmatory radiological surveys; and (4) environmental impact statements for selected uranium recovery, fuel facility and materials facility, and contaminated sites listed in the Site Decommissioning Management Plan (SDMP). These increases are partially offset by the completion of the licensing efforts associated with the Louisiana Energy Services Clairborne Enrichment Center and the completion of the first annual certification for the United States Enrichment Corporation's gaseous diffusion enrichment facilities.

Management and Support Program

FY 1996 Change From FY 1995 .... $2,032,000

The resource decrease in FY 1996 primarily reflects (1) completion of refurbishment for One White Flint North, (2) completion of start-up costs for high performance computing, (3) planned reductions in the microcomputer replacement program, (4) reductions in computer hardware maintenance costs and systems development efforts, and (5) planned reductions in supervisory and management development training.

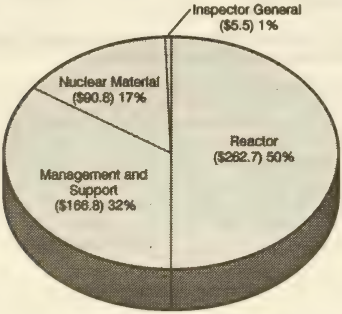
SUMMARY

Inspector General Program

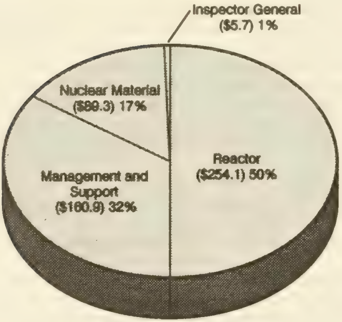
FY 1996 Change From FY 1995 .... $77,000

The resource increases in FY 1996 are primarily required to support additional contract costs for the annual audit of the agency's financial statement.

DISTRIBUTION OF NRC BUDGET AUTHORITY BY PROGRAM



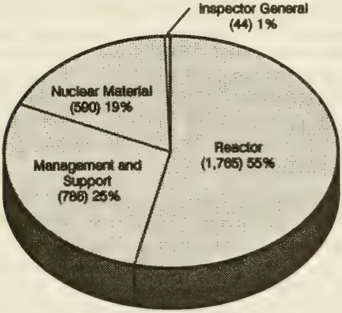
FY 1996 ($525.8 MILLION)



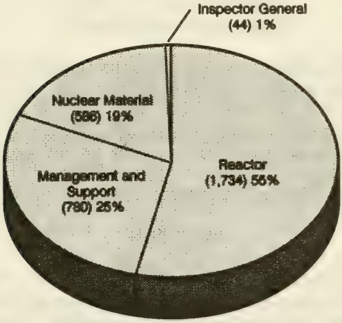
FY 1997 ($510.0 MILLION)

Note: Percentages are rounded to the nearest whole number

DISTRIBUTION OF NRC STAFF BY PROGRAM



FY 1996 (TOTAL STAFF 3,185 FTE)



FY 1997 (TOTAL STAFF 3,144 FTE)

Note: Percentages are rounded to the nearest whole number

PROGRAM GOALS AND PERFORMANCE MEASURES

The Nuclear Regulatory Commission (NRC) is committed to ensuring adequate protection for the public health and safety, the common defense and security, and the environment in the civilian use of nuclear materials in the United States. Sound financial management, an integral part of regulatory management, will improve the efficiency and effectiveness with which the NRC carries out its regulatory mission. Program and financial managers, working in partnership using modern management techniques and an integrated financial management system, will enable the NRC to make decisions and measure performance to achieve desirable outcomes and real cost effectiveness.

In July 1993 the Chief Financial Officer (CFO) issued the NRC's Principles of Good Financial Management that codified agency practices and highlighted the importance of sound financial management to the entire agency. These principles recognize that good financial management begins with good planning. The principles also recognize the necessity for periodic evaluation of performance against meaningful financial and performance measures and for financial implications being considered in decisionmaking. The Principles of Good Financial Management follow:

PRINCIPLES OF GOOD FINANCIAL MANAGEMENT

> Those who handle public resources have a special responsibility to safeguard the resources entrusted to them and to use them properly. Poor financial management by NRC can undermine the confidence that we are effectively accomplishing our health and safety mission. NRC managers must ensure that public funds are used for authorized purposes only and that they are used economically, efficiently, and within established limits. Toward these ends, the NRC uses the following Principles of Good Financial Management:

PLANNING

> Good financial management begins with good planning. NRC's strategic planning should be based on sound assumptions and accurate information, and should provide the foundation for the entire fiscal process. Resource requests must be consistent with program goals, guidance, and planning assumptions,

and must consider current financial status. Plans should be developed for the commitment and obligation of funds based on program needs, procurement lead times, and the need for continuity of funding.

CONTROL

Good financial management requires good financial control. Appropriate, cost effective controls throughout the financial management process ensure adequate accounting of funds expended, prevent over-obligation of funds and inappropriate expenditures, identify early instances where funds should be reallocated, and produce valuable information for the planning process.

COMMUNICATION

Good financial management requires good communication among those involved in the financial management process. Complete, accurate, and timely financial information must be readily available, and financial implications must be considered in decisionmaking. Financial systems should be integrated and meet both agency and office data needs. New information and ideas must be shared throughout the organization.

COST EFFECTIVENESS

Good financial management balances expenditures and results. Managers at all levels must ensure that NRC gets what it pays for and that the results are what NRC needs to accomplish its mission. Ongoing projects should be evaluated to ensure results justify continued funding. Appropriate precautions ensure that waste is avoided. To ensure maximum utility of available resources, funds should be obligated as early as practical during the fiscal year, and excess funds should be deobligated as soon as practical after project completion.

EVALUATION

Good financial management requires periodic evaluation of performance against meaningful financial and program performance measures. Such

> performance assessment should evaluate planned versus actual program results as well as the comparison of program costs with program accomplishments.

PERSONNEL

> Good financial management is the product of competent and motivated people. Those who are given financial management responsibility must have integrity, dedication, and be well trained and qualified. They must have authority that is commensurate with their responsibility, and they must be recognized when achieving superior performance.

The NRC has already established a framework for meeting the requirements of the Government Performance and Results Act (GPRA). The NRC's strategic planning process, which has been in effect for seven years, sets the long-term direction of the Agency and provides the basis for future resource requirements. Performance information is included in the Agency's financial statements pursuant to the Chief Financial Officers Act. During the next year, the NRC will further evaluate its program goals and program performance information in order to strengthen quantitative and qualitative measures of outputs and outcomes. Following is a summary of the current NRC goals and key program performance measures.

A. PROGRAM GOALS

Annually, the Steering Committee for Strategic Planning, which is composed of senior managers, assesses the Agency's strategic goals, planning assumptions, and objectives and guidance for the upcoming budget cycle. The FY 1996 Agency goals are:

1. Ensure that nuclear power plants and other licensed facilities are operated safely and that licensees are adequately prepared to respond to accidents.

2. Ensure NRC accident response capability and continue coordination of other government entities' response.

SUMMARY: Program Goals and Performance Measures

3. Ensure that nuclear power plants under construction are designed and constructed properly and are ready for safe operation.

4. Ensure that adequate capabilities exist for licensing of evolutionary and advanced reactor designs and for reactor license renewal activities.

5. Ensure that research provides the technical bases for timely and sound rulemaking and regulatory decisions in support of NRC licensing and inspection activities.

6. Ensure that current and future uses and transportation of nuclear and radioactive materials are safe and have adequate safeguards.

7. Ensure that high-level and low-level nuclear waste and uranium mill tailings are safely managed and disposed of.

8. Ensure that facilities, when no longer in operation, are adequately and safely monitored or decommissioned.

9. Continue to maintain special and independent reviews and investigations of NRC activities.

10. Allocate NRC's human and capital resources and direct the agency's affairs so that they contribute most effectively to the mission of protecting the public health and safety.

11. Ensure that the NRC has effective external communications and relations with outside organizations.

12. Conduct timely, independent Inspector General audits, investigations, and regulatory reviews, and recommend or suggest actions to reduce costs and/or improve NRC operations.

During the FY 1997 strategic planning process, the NRC's Steering Committee for Strategic Planning will place greater emphasis on program goals in the context of measurability as an element of implementing the GPRA. In particular, the committee will contend with how

SUMMARY: Program Goals and Performance Measures

NRC, as a regulatory agency, can link its program goals with outcomes when the success largely depends on the response of the regulated industry and companion regulatory activities of state governments.

B. PERFORMANCE MEASURES

The NRC financial statement includes performance measures for key aspects of the NRC's programs. In general, these measures are focused on output rather than outcome. They also primarily reflect budget execution history rather than budget formulation expectations. During the next year, these measures, as well as newly identified measures, will be evaluated, refined, and incorporated into the NRC's future planning process, as appropriate. The following performance measures, which will be included in the FY 1994 Financial Statement, are representative of measures that will be assessed for future implementation pursuant to GPRA.

Reactor Program

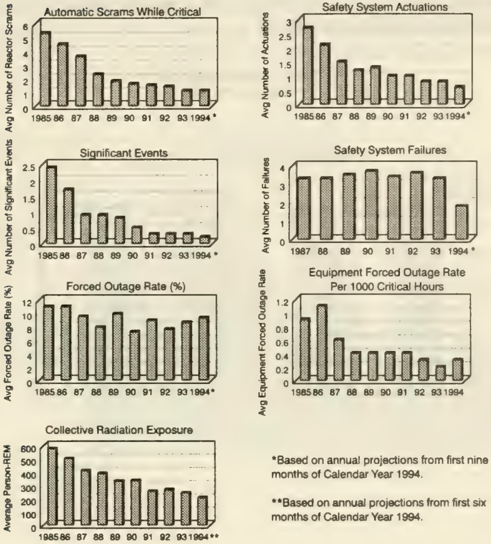
Safety of operations is the responsibility of NRC licensees. Regulatory oversight of licensee safety is the responsibility of the NRC. As an outcome measure, the safety performance of licensees is partially a reflection of the NRC's performance; however, it is not possible to isolate the causal relationship or a specific set of factors that directly link the NRC's performance to licensee performance.

Safety performance indicators reflect the collective results of the efforts of the NRC and the nuclear industry. Certain trends in industry performance reinforce that the NRC is accomplishing its mission of protecting the public health and safety.

As depicted in the following charts, Licensee Performance Indicators for Operating Nuclear Power Plants; Annual Industry Averages for 1985-1994, the general trend of the set of industry safety performance indicators has been toward improved industry performance. Although the overall trend has leveled off in recent years, there has been continued improvement in several of the indicators.

SUMMARY: Program Goals and Performance Measures

LICENSEE PERFORMANCE INDICATORS FOR
OPERATING NUCLEAR POWER PLANTS
Annual Industry Averages CY1985-1994

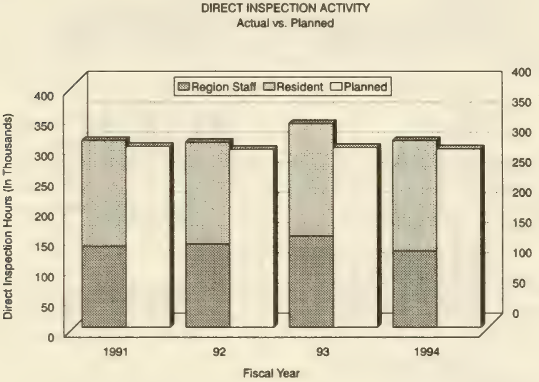


*Based on annual projections from first nine months of Calendar Year 1994.

**Based on annual projections from first six months of Calendar Year 1994.

SUMMARY: Program Goals and Performance Measures

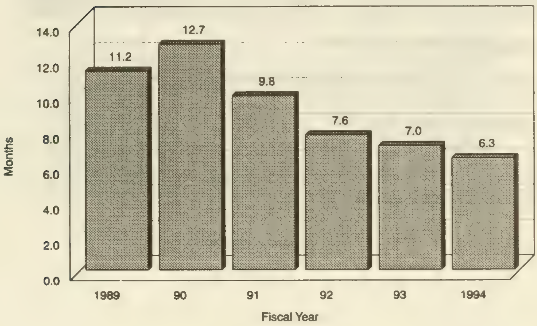
A basic element in the NRC reactor regulation program is the inspection of licensed reactor facilities to determine the state of reactor safety, confirm that operations are in compliance with the provisions of the license, and ascertain whether other conditions exist that have safety implications serious enough to warrant corrective action. The chart below shows the use of allocated inspection resources in direct inspection activities by resident and region-based staff. Direct inspection effort in FY 1994 was approximately 308,000 hours, which was approximately five percent greater than the hours that were planned.



SUMMARY: Program Goals and Performance Measures

Either routine activity or unexpected events at a nuclear facility can result in a need for licensing actions by the NRC. During FY 1994, the NRC completed about 1520 licensing actions for operating power reactors. The total inventory at the end of FY 1994 was 1293 licensing actions. Over 98 percent of the actions in inventory are plant-specific amendments requested by licensees; the balance are the result of NRC-imposed requirements. Steady progress has been realized in reducing the number of older licensing actions in the inventory. From 1989 to 1994, the percentage of licensing actions more than three years old has dropped from 23 percent to less than 2 percent. As the following chart shows, the median age of the licensing action inventory has also decreased over time.

LICENSING ACTIONS
Median Age of Inventory



SUMMARY: Program Goals and Performance Measures

Nuclear Materials and Nuclear Waste Program

One of the goals of the materials safety program is to ensure that radioactive materials are safe and have adequate safeguards during transit. Approximately 200,000 packages containing radioactive materials are shipped each year in NRC-certified packaging. Because NRC-certified packaging is designed to withstand severe accidents, the likelihood of a release occurring is minimal. As depicted in the following chart, there have been no transportation incidents involving radioactive releases from NRC-certified packages in the past five years.

TRANSPORTATION INCIDENTS

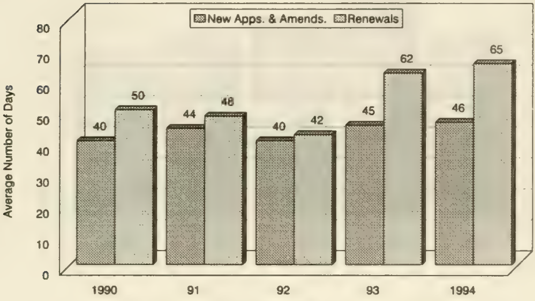
	FY 1990	FY 1991	FY 1992	FY 1993	FY 1994*
Incidents Involving NRC-Certified Packaging	3	13	4	7	1
Releases Involving NRC-Certified Packaging	0	0	0	0	0

* Information is through March 1994

SUMMARY: Program Goals and Performance Measures

NRC licenses and inspects about 7000 medical, academic, and industrial users of nuclear material and all commercial nuclear fuel facilities involved in the processing and fabrication of uranium ore into reactor fuel. During FY 1994, the NRC completed about 4800 licensing actions for materials users. The following chart shows the average time to complete the materials licensing reviews. The average number of days to complete renewals is somewhat higher than previous years because of the complexity of some of these reviews.

MATERIALS LICENSING REVIEWS
Timeliness



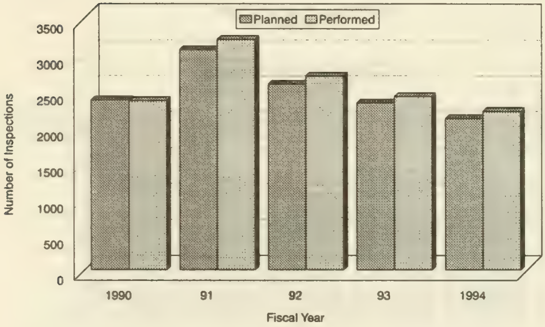
No. of Completions

Fiscal Year

SUMMARY: Program Goals and Performance Measures

As shown in the following chart, the NRC completed about 2200 inspections of materials facilities in FY 1994; which exceeded the planned number of inspections by four percent. Over the last four years, there has been a decline in the number of materials licensees, therefore, fewer materials inspections are planned and performed.

MATERIALS INSPECTIONS



REACTOR PROGRAM

REACTOR PROGRAM

(Dollar amounts in tables represent thousands of dollars ($K). In text, whole dollar amounts are used. Staff numbers represent full-time equivalents (FTEs).)

Total FY 1996 Estimate $262,672,000

	FY 1994 Enacted	FY 1995 Enacted	FY 1996 Estimate		FY 1997 Estimate	
			Request	Change from FY 1995	Planning Estimate	Change from FY 1996
Budget Authority by Function ($K)						
Salaries and Benefits	153,911	148,419	150,000	1,581	144,462	-5,538
Contract Support	115,142	108,708	101,191	-7,517	98,510	-2,681
Travel	11,185	11,665	11,481	-184	11,158	-323
Total	280,238	268,792	262,672	-6,120	254,130	-8,542
Budget Authority by Cost Center ($K)						
Reactor Regulation	235,955	228,922	225,661	-3,261	220,622	-5,039
Standard Reactor Designs	42,314	37,852	34,933	-2,919	31,476	-3,457
Test and Research Reactors	1,969	2,018	2,078	60	2,032	-46
Total	280,238	268,792	262,672	-6,120	254,130	-8,542
Full-Time Equivalent Employment by Cost Center						
Reactor Regulation	1,651	1,608	1,581	-27	1,574	-7
Standard Reactor Designs	192	176	169	-7	145	-24
Test and Research Reactors	14	15	15	0	15	0
Total	1,857	1,799	1,765	-34	1,734	-31

Changes in Budget Authority ($K)

	FY 1996 Change from FY 1995			FY 1997 Change from FY 1996
Cost Center	Current Services	Program Requirements	Total	Total
Reactor Regulation	6,600	-9,861	-3,261	-5,039
Standard Reactor Designs	999	-3,918	-2,919	-3,457
Test and Research Reactors	60	0	60	-46
Total	7,659	-13,779	-6,120	-8,542

REACTOR PROGRAM

EXPLANATION OF RESOURCE CHANGES FOR CURRENT SERVICES

The change for current services reflects (1) increases in personnel compensation of 2.0 percent general raise plus 1.21 percent locality raise expected in calendar year (CY) 1995, 2.4 percent expected in CY 1996, within-grade increases, and several minor adjustments, such as the varying number of paydays, the increased number of staff in the Federal Employees Retirement System, and the increased cost of benefits; and (2) increases for contract support and travel to reflect inflation estimated at 3.0 percent in FY 1996.

EXPLANATION OF RESOURCE CHANGES FOR PROGRAM REQUIREMENTS

Reactor Regulation

The resource decrease in FY 1996 reflects the resolution of outstanding severe accident safety issues; completion of the aging studies on electrical and mechanical components conducted under the Nuclear Plant Aging Research program; licensing of Watts Bar Unit 1; and reorganization/streamlining efforts.

Standard Reactor Designs

The resource decrease in FY 1996 reflects completion of the technical reviews in the design certification process for the two evolutionary reactor designs — the General Electric ABWR and the Combustion Engineering System 80+ designs; completion of the draft revisions of the Standard Review Plan (SRP) for the next generation of reactor designs and issuance of the draft SRP for public comment; and completion of modifications for the ROSA-V facility that will be used to validate systems performance for the Westinghouse AP600 design.

Test and Research Reactors

There are no significant changes to the resources required to conduct this effort in FY 1996.

DESCRIPTION OF PROGRAM

The Reactor Program encompasses all NRC inspection, oversight, and licensing of reactor facilities, as required by the Atomic Energy Act of 1954, as amended; all reactor regulatory research as required by the Energy Reorganization Act of 1974 (Section 205 of Public Law 95-209); and all other functions associated with reactors including evaluation of safety concerns, assessment of operational events and experience, technical training for NRC staff, independent review and legal advice to the Commission on safety issues, adjudicatory reviews, investigations of wrongdoing by reactor licensees, and reactor enforcement policy and actions to protect the public health and safety.

The Reactor Program is conducted by several NRC organizations, encompassing efforts at headquarters and in the regions. NRC's Office of Nuclear Reactor Regulation (NRR) is responsible for evaluating the public health effects, safety, environmental, safeguards, and antitrust aspects of reactor facilities; and ensuring that civilian reactor facilities are designed, constructed, and operated safely and are in compliance with agency regulations. Through these efforts, the NRC ensures that nuclear reactors are designed and constructed properly and are ready for safe operation; that licensees operate nuclear plants safely and are adequately prepared to respond in the event of an accident; and that licensees possess the capability to protect against sabotage and theft of nuclear materials at reactors. NRR, in coordination with the Office of Nuclear Regulatory Research, ensures that the NRC is prepared for the future licensing of reactors by reviewing applications for standard reactor design certification and reactor license renewal and updating acceptance criteria for future applications in standard review plans and other regulatory documents.

The Office of Nuclear Regulatory Research (RES) is responsible for developing recommendations for research and engaging in or contracting for research deemed necessary by the Commission in performing reactor licensing and related regulatory functions. RES provides independent expertise and information for making timely regulatory judgments, anticipates problems of potential safety significance for which new or expanded knowledge can assist the NRC in pursuing its mission, and develops regulations and regulatory guidance necessary to implement Commission policy or technical requirements. In conducting the agency's reactor safety research program, RES uses relatively new and highly complex technologies to make regulatory judgments on matters related to safety that are well beyond normal experience-based engineering practice. The NRC finds it essential to develop a body of knowledge that gives confidence in judgments to avoid undue risk to the health and safety of the public, especially when these matters involve high-consequence accidents. The NRC uses this body of knowledge in establishing the technical bases for issuing timely safety regulations and completing licensing and inspection activities based on the NRC's longstanding philosophy of defense in depth.

In an effort to make use of all available sources of safety research information, the NRC is engaged in broad cooperative international safety research programs to exchange nuclear safety-related information and to conduct joint research projects of mutual interest. NRC's policy of cooperating with foreign groups is designed to (1) obtain foreign experimental and analytical research results to expand NRC's technical base; (2) encourage foreign safety research programs to make the optimum use of NRC resources and enhance our research capabilities; and (3) interact with foreign nuclear safety organizations to obtain expert review of our research results. In addition, cooperative research between the NRC and industry is pursued in areas where conflict of interest issues are not involved.

Other NRC organizations also support the Reactor Program. The Office for Analysis and Evaluation of Operational Data (AEOD) provides the NRC with an independent capability to analyze operational data, and coordinates the development and implementation of the NRC staff technical qualification program. The Office of Investigations (OI) investigates alleged wrongdoing by licensees, applicants, contractors or vendors. The Office of Enforcement (OE) takes appropriate enforcement action against licensees for violations of NRC regulations. The Office of Nuclear Material Safety and Safeguards (NMSS) evaluates the threat environment at domestic reactors. The Office of the General Counsel (OGC) provides legal advice on all matters pertaining to reactors. The Advisory Committee on Reactor Safeguards (ACRS) provides independent advice to the Commission on safety aspects of proposed and existing nuclear plants. The Atomic Safety and Licensing Board Panel (ASLBP) conducts hearings and makes decisions in proceedings to grant, amend, suspend, or revoke NRC licenses.

The Reactor Program comprises the following three cost centers: Reactor Regulation; Standard Reactor Designs; and Test and Research Reactors.

The funds and staffing for each of the cost centers are discussed on pages 40 through 95. The contract support funds are allocated for work done by Department of Energy (DOE) contractors, commercial contractors, small-business entities, nonprofit organizations (e.g., universities and foundations), and grantees. The narrative that follows describes these cost centers and addresses the reasons why the resources are needed.

Reactor Regulation Cost Center

			FY 1996 Estimate		FY 1997 Estimate	
	FY 1994 Enacted	FY 1995 Enacted	Request	Change from FY 1995	Planning Estimate	Change from FY 1996
Budget Authority by Function ($K)						
Salaries and Benefits	136,074	132,081	133,816	1,735	130,673	-3,143
Contract Support	89,177	85,671	80,871	-4,800	79,285	-1,586
Travel	10,704	11,170	10,974	-196	10,664	-310
Total	235,955	228,922	225,661	-3,261	220,622	-5,039
Budget Authority by Activity ($K)						
Reactor Inspection	55,965	53,232	55,332	2,100	54,092	-1,240
Reactor Oversight	56,296	56,106	57,084	978	56,266	-818
Reactor and Site Licensing	5,404	4,354	1,705	-2,649	1,490	-215
Reactor Aging and Renewal	28,628	26,521	26,061	-460	25,342	-719
Reactor Safety Assessment and Regulation Development	41,837	41,250	38,214	-3,036	37,842	-372
Independent Analysis of Operational Experience	14,040	14,040	13,946	-94	13,536	-410
Technical Training and Qualification	6,801	6,996	6,897	-99	6,781	-116
Investigations, Enforcement, and Legal Advice	5,734	5,805	5,949	144	5,815	-134
Independent Review	5,420	4,711	4,802	91	4,606	-196
General Support	15,830	15,907	15,671	-236	14,852	-819
Total	235,955	228,922	225,661	-3,261	220,622	-5,039

REACTOR PROGRAM: Reactor Regulation

			FY 1996 Estimate		FY 1997 Estimate	
	FY 1994 Enacted	FY 1995 Enacted	Request	Change from FY 1995	Planning Estimate	Change from FY 1996
Full-Time Equivalent Employment by Activity						
Reactor Inspection	599	566	571	5	569	-2
Reactor Oversight	500	495	488	-7	493	5
Reactor and Site Licensing	36	31	9	-22	7	-2
Reactor Aging and Renewal	65	74	73	-1	73	0
Reactor Safety Assessment and Regulation Development	79	81	82	1	82	0
Independent Analysis of Operational Experience	71	68	68	0	67	-1
Technical Training and Qualification	25	25	25	0	25	0
Investigations, Enforcement, and Legal Advice	60	59	59	0	59	0
Independent Review	46	42	42	0	41	-1
General Support	170	167	164	-3	158	-6
Total	1,651	1,608	1,581	-27	1,574	-7

This cost center is conducted to ensure that nuclear power plants are designed, constructed, and operated safely; to prepare for future licensing activities to renew existing reactor licenses and reactivate existing reactors that have been deferred; to establish a sound technical basis and regulatory framework for reactor licensing activities; to ensure that the safety-related reactor plant systems and components perform their required function and maintain their integrity and operability over the life of the plant; to provide technical requirements and the regulatory framework for renewal of nuclear power plant operating licenses upon expiration of their 40-year license term; and to evaluate safety concerns involving reactor facilities, assess reactor operational events and experience, conduct reactor technical training for NRC staff, provide technical advice to the Commission on reactor safety issues, conduct reactor adjudicatory reviews, investigate alleged wrongdoing by NRC reactor licensees, and pursue reactor enforcement policy and actions to protect the public health and safety.

This cost center comprises ten major activities: reactor inspection; reactor oversight; reactor and site licensing; reactor aging and renewal; reactor safety assessment and regulation development; independent analysis of operational experience; technical training and qualification; investigations, enforcement, and legal advice; independent review; and general support.

Reactor Inspection

			FY 1996 Estimate		FY 1997 Estimate	
	FY 1994 Enacted	FY 1995 Enacted	Request	Change from FY 1995	Planning Estimate	Change from FY 1996
Budget Authority by Function ($K)						
Salaries and Benefits	46,661	44,015	45,850	1,835	44,867	-983
Contract Support	4,377	4,350	4,479	129	4,357	-122
Travel	4,927	4,867	5,003	136	4,868	-135
Total	55,965	53,232	55,332	2,100	54,092	-1,240
Full-Time Equivalent Employment	599	566	571	5	569	-2

The NRC assesses licensee operation of nuclear power plants to ensure the safe operation of the facilities in accordance with NRC regulations. The primary focus is on plant operations, maintenance, engineering, and plant support; and includes efforts by NRC resident, region-based, and headquarters inspectors.

NRC's inspection program consists of three basic types of inspections (1) the core inspection program, (2) plant-specific regional initiative inspections, and (3) generic safety issue inspections. For those plants that have demonstrated superior performance in specific areas of the NRC's systematic assessment of licensee performance (SALP) program, the goal is that they receive only the core inspection program and generic safety issue inspections in those areas in which they excel. Regional administrators have significant flexibility to direct additional inspections on safety problems and on plants that require special attention rather than on completing a more rigidly defined inspection program for each site. This flexibility helps to ensure that resources are allocated effectively to enhance reactor safety.

The NRC will conduct inspections at all 110 operating reactors during FY 1996-1997. Historically the NRC has spent a yearly average of approximately 2,800 hours in direct onsite inspection activities at each reactor. In recent years, however, industry performance has shown a demonstrated improvement. As a result, the NRC plans to reduce the direct onsite inspection effort to 2,700 hours per plant each year during FY 1996-1997. This reduction is expected to have no adverse effect on plant safety.

Resident inspectors serve as onsite NRC representatives in a variety of inspection functions. Their primary job is to observe, evaluate, and report on the adequacy of licensee nuclear safety activities concentrating on day-to-day licensee operations, event follow-up activities, licensee management, and staff performance. In addition, they coordinate onsite activities of the various agency offices and participate in emergency exercises. Resident inspectors carry out the major part of the core inspection program and participate in regional initiative and generic safety issue inspections. In general, the NRC assigns resident inspectors to operating reactor sites in accordance with the "N+1" policy (the number of reactor units plus one). Exceptions to N+1 staffing can be granted only at multi-unit facilities that have shown sustained high-level performance.

Region-based and headquarters inspectors carryout specialist inspection activities to supplement the activities carried out by resident inspectors. These specialist activities include in-depth technical inspections, operationally determined inspections, vendor/contractor inspections, and operator licensing requalification inspections. In-depth, specialized technical inspections are carried out by inspectors in the broad areas of plant operations, maintenance, engineering, plant support, and licensee control systems (systems established by the licensee to identify, resolve, and prevent problems that would degrade plant safety). To augment the efforts of the region-based inspectors, the NRC contracts for highly specialized technical assistance in areas such as electrical and mechanical engineering, metallurgy, instrumentation, aerial radiological surveys, environmental monitoring at reactor sites, and other independent, confirmatory measurements. In addition, region-based inspectors and headquarters staff respond to allegations of safety and safeguards violations at nuclear facilities and provide technical support to investigative personnel.

The NRC also conducts operationally determined inspections which are comprehensive examinations that evaluate the performance of all plant systems under specific circumstances. Such inspections include but are not limited to Safety System Functional Inspections, Safety Systems Outage Modification Inspections, Operational Safety Team Inspections, safety issue inspections, and special inspections relating to the restart of shutdown plants (e.g. Tennessee Valley Authority plants). These inspections are conducted by teams of specialists that include operations-, design-, and installation-oriented personnel, and provide senior NRC management a national perspective on plant performance in cases where regional inspections indicate the need to further examine overall operational safety. The NRC plans to conduct approximately 45 operationally determined inspections each year.

Vendor/contractor inspections are reactive in nature and determine whether suppliers of materials, components, and services used in nuclear power plants are complying with NRC requirements. These inspections improve reactor safety by (1) ensuring that root causes of reported vendor-related problems are identified and that suitable corrective actions are developed and implemented, (2) informing the nuclear industry of substandard, suspected counterfeit, or fraudulently marketed vendor products, and (3) ensuring that fraudulently marketed products are traced to their source. The NRC plans to conduct approximately 35 reactor vendor/contractor inspections each year through FY 1997.

Reactor operator licensing requalification inspections were implemented as part of the FY 1994 amendment to NRC's operator licensing regulations. The NRC will use this performance-based inspection program to evaluate licensee examination and training programs and to improve operational safety through early identification and correction of programmatic weaknesses.

To improve the inspection process, the NRC will continue to assess the effectiveness and implementation of the inspection program and apply lessons learned from events and inspection and enforcement findings to the inspection process.

REACTOR PROGRAM: Reactor Regulation

Reactor Oversight

			FY 1996 Estimate		FY 1997 Estimate	
	FY 1994 Enacted	FY 1995 Enacted	Request	Change from FY 1995	Planning Estimate	Change from FY 1996
Budget Authority by Function ($K)						
Salaries and Benefits	42,201	41,491	42,108	617	41,690	-418
Contract Support	11,600	11,615	11,854	239	11,538	-316
Travel	2,495	3,000	3,122	122	3,038	-84
Total	56,296	56,106	57,084	978	56,266	-818
Full-Time Equivalent Employment	500	495	488	-7	493	5

The NRC ensures that operating facilities maintain adequate levels of protection of public health and safety in their daily operation and throughout the life cycle of the plant. The NRC oversees safety in all operating conditions, in the event of a radiological emergency or theft of nuclear materials or sabotage. This safety oversight includes assurances that facilities are adequately designed and maintained, and that trained and qualified operating and technical support personnel can prevent or cope with accidents. The NRC fulfills its oversight role by performing probabilistic risk assessments to identify inadequacies in plant design and operation; evaluating operating experience and unanticipated events; resolving safety issues, inspection findings, and licensee proposals; and sponsoring safety research. These efforts enable the NRC to evaluate both plant and human performance, including accident management capability, and to focus on operational safety. Senior agency managers have the discretion to apply additional attention to plants for which systematic assessment of licensee performance (SALP) scores, significant events, or inspection findings indicate deficiencies.

Project managers perform the overall management activities pertaining to the regulation of nuclear power plants and serve as the headquarters point of contact with licensees, other NRC staff, and the public on safety matters concerning specific plants. They assign priorities to safety issues and manage the review and issuance of license amendments. In addition to reviewing plant modification activities that are initiated by licensees, project managers also review safety and environmental modifications to operating plants that are directed by the NRC as a result of safety, environmental, and safeguards assessments. Through these modifications, the NRC ensures that operating facilities achieve and maintain adequate protection of the public health and safety. Project managers also consult with State and local officials and reply to public and congressional inquiries. In addition, they conduct selected technical reviews, coordinate complex technical reviews, evaluate overall licensee performance, and assist the regions in developing inspection plans. The NRC will continue to conduct project management activities for 110 operating reactors through FY 1997.

After an operating license is issued, the requirements of the license may need to be changed as a result of routine activities, technical advances, or unexpected events at power plants. Detailed technical review of these licensing actions is necessary to ensure that the operational safety of the plant is not compromised. Routine post-licensing activities affecting reactor operations include requests for license amendments, requests for exemption from regulations, new regulations requiring backfit modifications to operating reactors, and orders for modifications of a license. Licensing actions can affect more than one plant.

To manage these changes effectively, the NRC has made a distinction between items that require review and approval by the NRC before they are implemented by the licensee (licensing actions) and items that either require licensee certification or do not require prior NRC review and approval (other licensing tasks).

The NRC expects to complete approximately 1,200 operating reactor licensing actions each year through FY 1997. These actions include conversions of plant-specific technical specifications to the improved standard technical specifications. As technical specifications (that are part of the operating license) increased in size over the years, some of the requirements became less safety-significant than others. Therefore, the NRC has worked with industry to improve technical specifications to make them more operator oriented and to focus on the more safety-significant requirements. Through FY 1997, the NRC will continue efforts to convert existing technical specifications for five lead plants (seven units) to the improved standard technical specifications. Three units are expected to convert by the end of FY 1995, and the remaining four units in FY 1996. Confirmation that the conversions were performed correctly will be completed in FY 1997.

Another major licensing action effort will result from applications from licensees to increase their power ratings by a small percentage (5 percent). Licensees of approximately 20 boiling water reactor (BWR) units have expressed interest in the BWR power uprate program; power uprates could increase the available electrical generating capacity in the United States by 1,000 megawatts with minimal plant modification and minimal impact on plant safety margins. The NRC expects to process four to six power uprate applications each year through FY 1997.

The NRC will also continue to review licensing actions that have no adverse effect on safety but that would provide economic relief to licensees. These cost-beneficial licensing actions (CBLAs) can reduce the burden on licensees without adversely affecting safety at currently operating plants. To be responsive to requests for CBLAs, the NRC will assign a higher review priority to requests of relatively low safety significance when such changes result in a high economic benefit to licensees. Safety significant issues will continue to receive high priority.

"Other licensing tasks" — license changes that do not require NRC review and approval before they are implemented by the licensee — may result in a safety evaluation, a letter to the licensee, or NRC internal documentation concerning technical or administrative issues for a particular plant. The NRC expects to complete approximately 1,000 "other licensing tasks" each year through FY 1997.

NRC's severe accident policy statement requires that all operating reactors undergo systematic examination to identify plant-specific features that are dominant contributors to risk. Individual plant examination (IPE) reports submitted by licensees are potential sources of licensing tasks. After the initial review by the Office of Nuclear Regulatory Research (RES), the Office of Nuclear Reactor Regulation (NRR) screens the findings to identify generic license implications and to initiate followup action.

Another source of licensing tasks is the review of the procedures that licensees maintain for coping with accident conditions (emergency operating procedures) and for implementing offsite protective measures (offsite emergency plans). Upgrades to the emergency operating procedures improve their technical content and increase their usefulness by applying human factors principles in their development.

The NRC can streamline the licensing action process by reviewing and approving topical reports submitted by licensees, vendor/owner groups, and other parties. Topical reports deal with safety issues common to a set of plants. The NRC will review the 10 to 20 most safety-significant topical reports each year through FY 1997.

Each year the Reactor Engineer Intern Program graduates a group of qualified, broadly trained technical and engineering personnel to assume professional positions in the NRC. Through a series of rotational and technical training assignments, the interns are given broad exposure to the work performed by the NRC. After successfully completing the 2-year program, interns are assigned permanently to technical professional positions. During FY 1996-1997, the program will continue to support both the headquarters and the regional missions of the Reactor Regulation Cost Center.

Experience has shown that safety issues will continue to arise as a result of events at operating reactors. In response to these events, the NRC analyzes various aspects of reactor performance to identify actions that would help to prevent significant events, and disseminates the findings to licensees via generic communication. This work supports NRC's accident prevention goals of having an effective regulatory program for designs that reduce the potential for safety-system challenges, high availability of equipment, effective operating personnel, and timely sharing of operating experience.

The NRC conducts prompt technical assessments of approximately 2,000 to 2,500 reactor event reports and augmented inspection team reports each year to determine the immediate safety implications for a facility, the applicability to other operating reactors, and the regulatory actions that must be taken. Event reports include telephone notifications of significant events at licensed reactor facilities, as well as additional event and followup reports submitted through the NRC's regional offices. Each year, approximately 300 event reports require followup effort by the NRC to ensure that affected facilities take appropriate corrective action. In addition, approximately 200 event reports require immediate corrective actions in the form of oral and written guidance and, on occasion, orders and confirmatory action letters. For certain significant events having generic concerns, the NRC issues temporary instructions to enable each region to verify licensee implementation of corrective actions.

Each year, NRC's regional offices submit approximately 50 potential generic safety questions and associated reports to the NRC headquarters staff for technical assessment. These questions are reviewed, the reports analyzed, and the results considered for dissemination to the licensees. In addition to the reports submitted by NRC regional personnel, the NRC expects that approximately 200 reports of defects and/or noncompliance (10 CFR Part 21) will be submitted annually by licensees and permit holders.

The NRC will also continue to support the incident investigation program by providing resources for approximately 15 augmented inspection teams and incident investigation teams each year through FY 1997 in response to significant operating events.

NRC's performance evaluation processes improve the agency's ability to evaluate the effectiveness of licensee performance to ensure safe plant operation. In evaluating performance, the NRC integrates data from many sources including technical reviews, licensee organizational structure evaluation and staffing, performance inspections, research, responses to industry initiatives, design and procedures change processes, and reports on the effectiveness of operating plant maintenance and surveillance. NRC senior management uses these results to appraise plant performance and direct attention to those plants of greatest concern.

The systematic assessment of licensee performance (SALP) program is a major effort that involves collecting and assessing inspection data on each site. The purposes of the SALP review process are (1) to conduct an integrated assessment of performance for safe plant operation, (2) to provide a means for useful dialogue with the licensee, (3) to assist NRC management in allocating resources used to inspect and assess licensee performance, and (4) to inform the public of NRC's assessment of licensee performance. NRC's SALP methodology places special emphasis on licensee performance in the areas of operations, maintenance, engineering and plant support. Through FY 1997, the NRC will continue to conduct SALP reviews for each reactor site on about an 18-month schedule, depending on licensee performance. The NRC will issue approximately 50 SALP reports covering approximately 80 operating units each year.

By integrating data collected from programs and activities such as inspections, enforcement, event evaluations, SALP reviews, operator examinations, and trend analyses, the NRC compares current operational trends with historical patterns. Through FY 1997, the NRC will continue to use these data to evaluate operational performance at nuclear power plants to identify plants that exhibit declining, marginal, or unacceptable safety performance, to determine appropriate corrective action, and to evaluate the effectiveness of licensee actions to address declining, marginal, or unacceptable safety performance. The NRC will continue to emphasize identification and correction of root causes of declining, marginal, or unacceptable safety performance.

NRC's quality assurance program provides another vehicle to ensure acceptable operational safety at nuclear power plants by determining the underlying causes of major operations-related problems and ensuring their timely detection and correction. The NRC will continue to develop and implement methodology, procedures, guidance, and training for NRC inspectors. In addition, it will continue to support industry initiatives to perform critical self-assessments, that are designed to heighten licensee awareness and to enhance licensee ability to predict plant performance trends and resolve associated problems as early as possible. The NRC will conduct approximately 35 technical reviews of new and revised licensee quality assurance programs each year through FY 1997.

In addition to reviewing reactor performance at plants that have been operational for longer periods, the NRC must evaluate licensee performance and review licensee test programs for initial plant startup and for restart of plants that have been shut down. Through FY 1996, the NRC will focus its restart review efforts on Browns Ferry Units 1 and 3.

The NRC's new performance-based maintenance rule will become effective on July 10, 1996. The Commission believes that safety can be enhanced by improving nuclear power plant maintenance across the industry and that effective maintenance must be sustained over the life of each facility. In FY 1996, the NRC will continue to conduct pilot inspections at selected licensee facilities to evaluate NRC procedures for inspecting licensee implementation of the maintenance rule.

The NRC must license all personnel authorized to operate reactors. To fulfill this responsibility, the NRC currently administers initial and requalification examinations to approximately 5,000 licensed power reactor operators to evaluate their understanding of the facility design and their familiarity with the controls and operating procedures. These examinations consist of both written examinations and hands-on operating tests under simulated operating conditions.

Initial examinations are given to new operators at existing power reactor facilities to ensure that operating plants are staffed by qualified operators. The NRC plans to conduct approximately 850 initial examinations for power reactor operators each year through FY 1997. As part of the initial examination process, the agency will also conduct approximately 650 generic fundamentals examinations annually to measure the candidate's knowledge of reactor theory, plant components, and thermodynamics.

In FY 1994, the Commission approved a change to the operator licensing rule that will enable the NRC to more efficiently utilize its resources by inspecting licensees' requalification programs to verify continued operator proficiency rather than conducting individual requalification examinations. The NRC will continue to conduct requalification examinations at selected facilities "for cause" only — because of inspection results or licensee performance problems. Through FY 1997, the NRC plans to inspect 50 requalification programs each year.

Also included within the scope of operator licensing activities are efforts to resolve generic problems associated with operator licensing, to maintain an examination question bank, to review appeals pertaining to license denials, and to improve the proficiency of examiners. Through FY 1997, various aspects of examination program implementation (including the newly developed examiner training syllabus, upgraded refresher training for examiners, and improved guidance for preparing and conducting examinations) will be evaluated.

The plant personnel training and human-systems interaction efforts included in this activity evaluate the ability of nonlicensed nuclear power plant personnel to meet job performance requirements; ensure that an effective mechanism exists to assess and improve, where necessary, the quality and effectiveness of licensee training programs (not including the requalification program training discussed above); and ensure that nuclear power plant operational events involving human performance receive a detailed analysis that will enable the root causes to be determined and corrections to be made.

In compliance with the April 1990 decision by the U.S. Court of Appeals for the District of Columbia, the NRC issued, in 1993, regulatory requirements for training and qualifying civilian nuclear power plant personnel. The regulation, 10 CFR 50.120, "Training and Qualification of Nuclear Power Plant Personnel," supersedes the amended policy statement on "Training and Qualification of Nuclear Power Plant Personnel" issued in November 1988. The NRC continues to endorse the Training Accreditation Program managed by the Institute of Nuclear Power Operations (INPO). The staff will monitor and evaluate the effectiveness of this accreditation program by participating in INPO's accreditation team visits. NRC teams, licensing examiners, and/or training and assessment specialists will conduct performance-based post-accreditation reviews. The NRC senior staff will also observe the discussions of the INPO team representatives and the utilities before the National Nuclear Accrediting Board. To conduct the evaluations and determine adherence to the new rule, the NRC will observe INPO training accreditation team visits at two or three sites each year through FY 1997. The NRC also plans to conduct approximately seven training program inspections for cause each year to ensure program effectiveness.

The NRC will continue to provide project management oversight of all reactors in the decommissioning process, including reviews of all proposed license amendments, exemption requests, and decommissioning plans. Based upon recent experience with prematurely shutdown plants, the NRC is also reviewing the regulatory process for decommissioning. As part of this review, the staff will clarify the applicability of existing regulations to plants in the decommissioning process, reducing the need for licensees to submit exemption requests.

On the basis of the results of NRC's analysis of a reactor operating event, a licensee or vendor deficiency report, or a study or report issued by NRC's Office for Analysis and Evaluation of Operational Data, the NRC may determine that a potential safety problem exists and recommend or require that corrective action be taken. In cases that warrant prompt notification of licensees, vendors, and the agency staff of the existence of a potential safety-related problem, the NRC will issue a generic communication (i.e., a generic letter, information notice, or bulletin) that will recommend or require corrective action. The NRC recently revised the process it uses to develop and issue generic communications. The revised process ensures greater participation by interested groups and the public in developing generic communications that state new staff positions or that seek additional licensee commitments. The NRC expects to prepare and issue approximately 110 generic communications each year.

To assist the staff in analyzing data and making decisions on issues affecting safety, the NRC created an in-house organization to develop and apply advanced computer codes used to analyze plant data for operating reactor performance, safety analyses of new reactor designs, and other special studies. During FY 1996-1997, the NRC will maintain the analytical capability to support technical staff reviews.

As part of its mission to ensure the public health and safety, the NRC must maintain the ability to safeguard nuclear power facilities against radiological sabotage and theft of nuclear materials. In its continuing effort to evaluate the threat environment, the NRC assesses all reported information on potential or actual threats worldwide; adversary characteristics, intentions, and capabilities of terrorist group activities; and any relevant domestic or foreign events of a nuclear or nonnuclear nature. A team of specialists is available to work with NRC licensees to assess reported threats and to respond promptly. Through FY 1997, the NRC will continue its trends analysis efforts and its program to review and evaluate threat information. The NRC will also publish annual revisions to the "Safeguards Summary Events List" (NUREG-0525).

Reactor and Site Licensing

	FY 1994 Enacted	FY 1995 Enacted	FY 1996 Estimate		FY 1997 Estimate	
			Request	Change from FY 1995	Planning Estimate	Change from FY 1996
Budget Authority by Function ($K)						
Salaries and Benefits	2,924	2,492	786	-1,706	598	-188
Contract Support	2,354	1,660	709	-951	687	-22
Travel	126	202	210	8	205	-5
Total	5,404	4,354	1,705	-2,649	1,490	-215
Full-Time Equivalent Employment	36	31	9	-22	7	-2

The NRC ensures that nuclear power plants are designed and constructed properly and are ready for safe operation, and prepares for and conducts future licensing activities associated with new reactor designs and the reactivation of deferred reactors.

The NRC is responsible for reviewing applications for reactor construction permits and reactor operating licenses to evaluate their safety, environmental, and safeguards aspects, as well as their antitrust implications. As part of the review process, the NRC inspects reactors throughout their construction to assess applicant conformance with construction standards. The NRC also assesses the operational readiness of each applicant to ensure that plants are ready for and capable of safe power operation before issuing an operating license. In FY 1995, the NRC will issue an operating license to Watts Bar Unit 1. At present, there are no construction permit or early site permit applications pending NRC review.

The NRC continues to enhance its capability to review new applications and to create a stable and predictable licensing environment. During FY 1996-1997, the NRC will focus on tasks in several siting and environmental areas including (1) revision to parts of the environmental standard review plan to reflect requirements in NRC regulations, regulatory guides, and technical specifications, and to update site suitability and emergency preparedness issues in areas such as the geosciences in which significant changes in technology and assessment methods warrant inclusion in the review guidance to the staff, (2) enhancement of geographical information and expert systems capabilities for site characterizations and license reviews, and (3) revision of the reactor siting criteria contained in 10 CFR Part 100 to decouple source term and dose calculations from reactor siting. The update will include revisions to Appendix A, "Seismic and Geologic Siting Criteria for Nuclear Power Plants" to reflect improved understanding of geological and seismological phenomena gained since the adoption of Appendix A in 1973.

Reactor Aging and Renewal

			FY 1996 Estimate		FY 1997 Estimate	
	FY 1994 Enacted	FY 1995 Enacted	Request	Change from FY 1995	Planning Estimate	Change from FY 1996
Budget Authority by Function ($K)						
Salaries and Benefits	5,634	6,357	6,448	91	6,316	-132
Contract Support	22,826	19,973	19,418	-555	18,841	-577
Travel	168	191	195	4	185	-10
Total	28,628	26,521	26,061	-460	25,342	-719
Full-Time Equivalent Employment	65	74	73	-1	73	0

As reactors age and approach the expiration of their operating licenses, the NRC must (1) be prepared to evaluate applications to renew current reactor operating licenses beyond their expiration dates, (2) understand the effects of aging on materials and safety-related systems and components, (3) ensure that the safety-related reactor plant systems and components perform their required function and maintain their integrity and operability over the life of the plant, and (4) establish the technical requirements and regulatory framework for renewal of nuclear power plant operating licenses upon expiration of their 40-year license term.

The NRC must be prepared to evaluate licensee applications to renew current reactor operating licenses beyond their expiration dates. This preparation involves determining technical and policy issues, resolving licensing issues, and defining the criteria and process to review such renewal applications. The NRC issued the final rule (10 CFR Part 54) in December 1991, establishing the procedural requirements that an applicant for renewal of a nuclear power plant operating license must meet and the information that the applicant must submit to the NRC. As a result of industry concerns associated with the efficiency of implementation of the final rule and the need to integrate the maintenance rule (10 CFR 50.65) with the renewal rule (10 CFR Part 54), the NRC issued a proposed amendment to 10 CFR Part 54 that is expected to become final in FY 1995. The SRP and regulatory guide are projected to be completed in FY 1996.

In a separate rulemaking, the NRC is revising 10 CFR Part 51, Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions, to enhance the agency's environmental review process for reactor license renewal. The final revised rule is scheduled for publication in FY 1995. It is anticipated that a number of environmental issues previously identified for generic consideration in the proposed rule will be reclassified to require plant-specific analyses. The need for plant-specific analyses will increase the effort required to complete environmental reviews associated with license renewal applications.

When the NRC first approached the license renewal process, lead plants were thought to be the best way to resolve issues associated with license renewal. Since that time, however, both lead plants — Yankee Rowe and Monticello — have either withdrawn or indefinitely postponed their applications for plant-specific reasons. From this experience, both the NRC and the industry have concluded that a generic approach is needed to work through the license renewal process for the first time. The Babcock & Wilcox (B&W) Owners Group has started discussions with the NRC on a license renewal program for B&W design facilities. Submittal of a license renewal application from a B&W member plant in FY 1997 is one of the objectives of this program. The Westinghouse and BWR (Boiling Water Reactor) Owners Groups are pursuing a similar approach; however, no schedule has been established for a submittal from either owners group. The Baltimore Gas & Electric Company has also asked the NRC to review its proposed program to implement the license renewal rule.

The industry's generic programs will identify systems, structures, and components that need to be reviewed to determine if the effects of age-related degradation are being managed by existing programs or if additional analyses or actions are necessary. In parallel with the generic license renewal program, the NRC plans to develop and revise the technical and environmental standard review plans for license renewal to reflect experience gained during the generic program reviews and to enhance future reviews of license renewal applications.

Aging affects all reactor systems, structures, and components in various degrees and has the potential to increase risk to the public health and safety if its effects are not controlled. To ensure continuous safe operation of currently licensed reactors, the NRC will characterize aging effects, evaluate methods to detect aging degradation, and evaluate the effectiveness of typical current maintenance and repair practices to mitigate the effects and diminish the rate of degradation caused by aging. The NRC will accomplish this by conducting experiments on a wide variety of materials under a wide range of expected environmental conditions. The assessment of the safety implications of aging will be used as the basis for making decisions on extending reactor operation beyond the original license period of 40 years.

The NRC will evaluate the cumulative effects of radiation on reactor pressure vessel materials that occur during the normal service of operating reactors to (1) determine the factors that can cause the vessel to become increasingly brittle and potentially fail during normal operation and accidents and (2) identify factors or processes, such as annealing, that can ameliorate these consequences. Brittle fracture of the reactor pressure vessel, that could result in a core melt accident, must be prevented by ensuring that adequate safety margins exist in NRC regulations. The current safety margins are intended to cover uncertainties in analysis methods and material characteristics used in evaluating reactor pressure vessel safety. To ensure that reactors can continue to operate safely during the 40-year license term and during an additional 20-year license renewal period, the actual behavior of reactor pressure vessel materials exposed to radiation must be reflected in the NRC's safety analyses, and the analytical methods and material databases must be validated to ensure that an adequate, but not unnecessarily large, margin of safety exists. Experimental and analytical research on the effects of temperature, stress, irradiation, and flaws will be used to provide assurance that reactor pressure vessels will not fail by brittle fracture during service or in the event of an accident.

The NRC will continue the technical review of pressurized thermal shock (PTS) issues started in FY 1992 with the Electric Power Research Institute (EPRI). This technical review will address the fracture mechanics and materials aspects of the PTS analyses described in Regulatory Guide 1.154, to determine which aspects of the guide warrant revision. This effort is expected to contribute to an overall assessment of the guide, providing input to the technical basis for its revision in FY 1996. During FY 1996-1997, the NRC will complete tests simulating an axial or circumferential surface crack in a pressure vessel to evaluate the combined effects of bi-axial loading and cladding, and issue the final report. The results of the effects of stainless steel cladding on fracture initiation under startup and accident loadings, such as PTS, will be incorporated in the NRC evaluation. During FY 1996-1997, the NRC will evaluate the effects of fracture-mode conversion and the effects of high loading rates on fracture toughness for reactor pressure vessel materials.

During FY 1995-1996, the NRC will perform irradiation and testing to evaluate the effects of thermal annealing and reirradiation on irradiation-embrittled reactor pressure vessel steels to validate the draft rule and regulatory guide on thermal annealing which was issued for public comment in early FY 1995. In FY 1995, the NRC will complete the irradiated material characterizations and begin the irradiated and annealed testing. In FY 1996, testing of the annealed specimens will be completed, the reirradiating begun, and the results reported.

During FY 1995-1997, the NRC will develop and verify physical models, based on fundamental mechanisms, for radiation hardening and embrittlement, and correlations needed to update the calculation procedures for predicting changes in toughness of irradiated pressure vessels. Advanced microscopic techniques will be used to characterize relationships between fundamental properties and service-induced microstructures. The NRC will also participate in the International Group on Radiation Damage Mechanisms.

During FY 1995-1997, the NRC will develop, maintain and upgrade computerized databases, calculational procedures, and standards for determining fluence spectra and assessing embrittlement of reactor pressure vessels and will determine the uncertainties with predictive methods and databases.

In FY 1996, the NRC will continue to participate in international cooperative projects on pressure vessel fracture. In FY 1995, analyses of large-scale experiments to validate pressure vessel fracture mechanics analysis methods as part of a continuing effort by the Fracture Analysis Group sponsored by the Committee on the Safety of Nuclear Installations (CSNI) will be completed. In FY 1996, the NRC will also participate in the Commission of European Communities (CEC) Network for Evaluating Steel Components program by performing and reporting pre- and post-test analyses of the large scale fracture experiment.

In FY 1996, the NRC will complete testing and data analysis to support an update of the American Society of Mechanical Engineers (ASME) Code Section XI fatigue crack growth rate curves and the Section III fatigue design curves for piping and pressure vessel steels. The effects of operating temperature, loading history, and light-water reactor environment will be addressed. In FY 1996, the NRC will provide to the Section III subcommittee, updates for crack growth rate curves, which, if accepted, would be incorporated in updates for fatigue design codes. In FY 1995, the NRC will study fatigue and crack growth for thermally aged cast stainless steels to quantify the degree and significance of reductions in fatigue life or increases in environmentally assisted crack growth rates. The data will be provided to the cognizant committee for the ASME Code Section III for consideration in the FY 1996 update of the fatigue life and Section XI crack growth rate curves.

The NRC will complete irradiation of austenitic stainless steels and other materials (Alloys 600, 182) in the Halden reactor to provide test materials to assess the effect of composition on irradiation-assisted stress corrosion cracking (IASCC) susceptibility and radiation embrittlement in FY 1995. In FY 1995, the NRC will begin testing low and medium fluence irradiated materials for fracture toughness to develop fracture toughness correlations and determine effects of material composition and water chemistry on intergranular stress corrosion cracking susceptibility. Also in FY 1995, the NRC will begin testing high fluence materials, and will complete the test and analyses in FY 1997.

Steam generator tubes comprise more than fifty percent of the primary pressure boundary surface. Various forms of tube degradation have occurred since the inception of commercial operation of PWRs. In recent years, various forms of environmentally induced cracking have been most prominent. The NRC will conduct research to quantify the parameters responsible for this cracking and on methodologies for inspection and evaluating the continued integrity of degraded tubes. During FY 1996, advanced methods of inspection for degraded steam generator tubes will be validated and recommended for incorporation in the ASME Code Section V. In FY 1997, initial models will be developed for predicting crack initiation and growth, leak rate and burst pressure as a function of the operating environment.

In FY 1996, the NRC will recommend upgrading ASME Code and regulatory positions to reflect the results of the International Program for the Inspection of Steel Components (PISC III) and will pursue code adoption.

In FY 1996, the NRC will complete and publish a report on a risk-based inservice inspection pilot study of BWRs. Additionally, in FY 1996, the NRC will issue a report on risk-based inspection of LWR components to describe specific inservice inspection programs for various components in nuclear power plants.

During FY 1995-1996, the NRC will acquire and analyze aged cable and electrical equipment from shutdown plants as available. In situ aged degradation will be compared with prior accelerated aging results.

In FY 1995, the NRC will publish final technical reports of aging research completed on the following components and safety-related systems: heat exchangers, electrical connectors in Class 1E distribution system, low pressure/RHR emergency core cooling system, auxiliary feedwater system, turbine drives, and governors.

In FY 1996, NRC will propose amendments to 10 CFR 50.55a to: (1) eliminate the 10-year update requirement for licensee inservice inspection (ISI) and inservice testing (IST) programs; (2) establish baseline regulatory requirements for ISI and IST programs based, respectively, on specific edition/addenda of the ASME Boiler and Pressure Vessel Code (ASME BPV Code), and the ASME Operation and Maintenance Code (ASME OM Code); (3) provide for voluntary implementation of subsequent edition/addenda of the ASME BPV and OM Codes that have been approved by the NRC, and for mandatory implementation of certain provisions of these subsequent edition/addenda that are supported by backfit considerations; (4) expand the scope of 50.55a to require ISI and IST of safety-related snubbers; and (5) based upon new industry input, remove the modification in 50.55a that applies to ASME BPV Code rules for IST of containment isolation valves.

In FY 1996, a technical basis will be developed for understanding valve and motor-operator behavior under design basis conditions to support NRC regulatory needs for evaluating licensees implementation of Generic Letter 89-10, and prioritization of motor-operated valves (MOVs) based on risk. In FY 1996, the NRC will issue the results of tests performed on MOVs and will submit the results to ASME to consider as a basis for revising appropriate ASME Standards. Development of a technical basis to support NRC regulatory staff in evaluating licensee applications of the EPRI performance prediction method and other methods for demonstrating MOV operability will be completed in FY 1996 and a basis for determining motor-operator margins required to counter the detrimental effects of valve and motor-operator aging degradation will be completed in FY 1997.

During FY 1995-1997, the NRC will continue to address license renewal issues, both safety and environmental, as they may arise. During FY 1996-1997, the NRC will also initiate and conduct a rulemaking on Alternative Site Review.

REACTOR PROGRAM: Reactor Regulation

Reactor Safety Assessment and Regulation Development

	FY 1994 Enacted	FY 1995 Enacted	FY 1996 Estimate		FY 1997 Estimate	
			Request	Change From FY 1995	Planning Estimate	Change from FY 1996
Budget Authority by Function ($K)						
Salaries and Benefits	7,026	7,155	7,436	281	7,277	-159
Contract Support	34,374	33,687	30,363	-3,324	30,174	-189
Travel	437	408	415	7	391	-24
Total	41,837	41,250	38,214	-3,036	37,842	-372
Full-Time Equivalent Employment	79	81	82	1	82	0

This activity is conducted to (1) provide an in-depth examination and understanding of abnormal operating events and plant transients experienced by the nuclear industry; (2) understand the causes of human error during reactor operations and maintenance, including the effects of operator/control system interfaces on human performance; (3) understand ways to prevent and mitigate the consequences of severe core damage or core melt accidents; (4) improve the NRC's ability to evaluate the potential effects of earthquakes on reactor operations; (5) assess the adequacy of safety margins in the current analysis methods used to ensure reactors can continue to operate safely; and (6) manage the development of revised reactor-related regulations, policy statements, and regulatory guides that incorporate research results.

Understanding safety-significant abnormal operations and plant transients experienced by the nuclear industry is an important element in the Commission's continuing efforts to maintain an adequate margin of safety as more plants are brought on line and as operating plants continue to age. Analysis of these operating events requires information on the processes of heat transfer and fluid flow (the thermal-hydraulic response) of the reactor coolant system over the range of plant transients and accidents that could potentially occur. These events include design-basis accidents (required to be analyzed in license applications), non-design-basis events such as multiple-system or component failures, common mode failures, and operator errors that have been revealed through probabilistic risk assessments and operating experience.

Plant performance research is being conducted by the NRC to provide validated methods by which the staff can evaluate design-basis accidents, safety implications of actual events and hypothetical transient scenarios determined to be major contributors to risk as shown by probabilistic risk assessment studies and actual operating events. This work is focused on integrating experimental data and associated calculations into a firm technical basis to support regulatory actions such as modifications to plant technical specifications, reviews of accident management plans, or remedial actions responding to operating events. The principal products of this research are analytical tools (computer codes) used to understand and predict the plant response to deviations from normal operating conditions. The capability of the computer codes to predict plant response with an acceptable uncertainty is validated using (1) basic experiments to derive empirical formulas for determining coolant system behavior under postulated transients; (2) separate-effect experiments to evaluate the code predictions for a single, complex component; and (3) integral system experiments to evaluate the code predictions for a complete reactor system.

During FY 1996-1997, the NRC will continue archiving and retrieving experimental thermal hydraulic data from the established experimental data bank. The data bank contains test data from domestic and foreign thermal-hydraulic related experiments, and plant startup and operational transient data. The data bank is a central repository of qualified results in a standard format, and includes over 800 digital magnetic tapes that can be readily accessed by the staff to support specific licensing actions.

During FY 1996-1997, the NRC will continue to maintain and improve the TRAC-PWR and RELAP5 computer codes. RELAP5 is a light-water reactor transient analysis code used to support rulemaking and to evaluate generic safety issues, audit license submittals, and analyze unresolved safety issues. RELAP5 is also a basic component of the Nuclear Plant Analyzer (NPA). The NPA is operational at NRC Headquarters to provide an in-house analysis capability to evaluate accident management strategies, advanced reactor design capabilities, and significant abnormal events in operating reactors. The NRC will continue to develop and maintain a representative set of plant input decks to support the use of the NPA. Other thermal hydraulic codes (TRAC-BWR, RAMONA-3B) will also be maintained to ensure these codes reflect the latest results of foreign and domestic safety experiments and recent operating events. The TRAC-PWR code is for PWR analyses, whereas TRAC-BWR and RAMONA-3B codes are for BWR analyses. RELAP5 can analyze either PWR or BWR plants. The TRAC, RELAP5, and RAMONA-3B codes will also be used to analyze new reactors of advanced design. That effort is discussed in the Standard Reactor Designs Cost Center.

The NRC will continue to contribute to the Code Applications and Maintenance Program, an international program among members of the international nuclear safety community who use and support this code maintenance and updating activity. During FY 1996-1997, the NRC will perform analyses or experimental assessments to determine the scope and magnitude of potential safety issues that could arise as a result of operating events, staff reviews, or ACRS reviews. Recent examples of work in this area include studies of BWR stability under anticipated-transient-without-scram conditions, long-term cooling after a loss-of-coolant accident, and shutdown cooling after the loss of the residual heat removal system.

During FY 1996-1997, the NRC will continue to support thermal hydraulic test loops at Purdue University, University of Maryland, College Park, and Oregon State University.

Experience has shown that most safety-related events reported at nuclear facilities involve human performance. To reduce human errors and thereby reduce the risk to the public from the accidental release of radioactive material, the NRC needs to (1) understand the root causes of human error during reactor operations and maintenance; (2) develop methods to quantify the effects of the design and qualification of instrumentation and control system displays on human performance; (3) analyze the effectiveness of the interface between the nuclear power plant system and the human user in improving operator performance; and (4) integrate human and hardware reliability analysis data and methods into probabilistic risk assessments. The research results will be used to identify, systematically prioritize, and suggest solutions to human reliability issues in the maintenance and operation of nuclear facilities during normal, abnormal and emergency situations.

In FY 1996, the NRC will complete a study of the effect of staffing issues in the nuclear industry on safe startup and operation of nuclear power plants. During FY 1996-1997, the Office of Nuclear Regulatory Research (RES) will provide direct human factors support to the Office of Nuclear Reactor Regulation (NRR) and the Office for Analysis and Evaluation of Operational Data (AEOD) in inspections of human error-related incidents to maintain the staff's awareness of current operational problems, provide insights to investigation methods, and improve the database.

The NRC will continue research to address the safety issues associated with the nuclear power industry's current and planned use of artificial intelligence and computers in reactor and safety system operation and control, and will, during FY 1996-1997, develop the technical bases for adopting appropriate licensing criteria for application of these new technologies. Also during FY 1996-1997, the NRC will continue participating in the Organization for Economic Cooperation and Development (OECD) Halden Reactor Project. The valuable technical information gained from this 10-year project will help establish guidelines and criteria for reviewing advanced human-system interfaces, computer-based operator support systems, integrated surveillance and control rooms, and the verification and validation of computer software. Reports will be issued summarizing experience at the Halden Reactor Project that has accrued over the last several years on topics related to advanced instrumentation and control systems and their effects on operations. In FY 1995, the NRC will complete Revision 1 to NUREG-0700 "Guidelines for Control Room Design Reviews," and issue it for public comment. The revision will provide guidelines for the staff review of control rooms using digital instrumentation and control system technology. In addition, the NRC has asked the National Academy of Sciences to conduct a study on the regulation of digital instrumentation and control systems in nuclear power plant applications. The study is to begin in FY 1995 and be completed in FY 1996.

In FY 1996, to support reliability and risk assessments, the NRC will continue to develop and evaluate methods and criteria for acquiring probabilistic data on human and hardware failures and combinations thereof. The NRC will use information from programs such as the operator requalification examinations. During FY 1996-1997, the NRC will develop methods for assessing the effects of organizational factors on plant safety and for incorporating such impacts into probabilistic risk analyses (PRAs). The NRC will also develop and implement guidance for using PRA models and tools in event assessment and issue analysis.

In addition to routine operations, the NRC is also concerned about severe reactor accidents. Severe accidents have the potential to adversely affect the public health and safety by accidentally releasing radioactive fission products to the environment. NRC efforts are directed toward reducing the risk of nuclear power plant accidents by requiring design and operating strategies to prevent or ameliorate the consequences of such accidents. The NRC accomplishes this by (1) improving our understanding of severe-accident phenomena; (2) identifying and evaluating methods to prevent and/or mitigate the consequences of severe accidents; (3) developing methods and tools to analyze the frequencies, consequences, and risks associated with severe accidents; (4) ensuring the adequacy of safety margins in the current methods of evaluating containment integrity under severe accident conditions; and (5) determining whether severe accident research results warrant revisions to NRC regulations or policies. Results of these efforts will be applied in staff reevaluations of siting and emergency planning requirements and implementation of the individual elements of the Commission's severe accident, safety goals, and backfit policies.

To improve our understanding of severe accident phenomena, the NRC has completed direct containment heating (DCH) experiments on the simulated Zion- and Surry-type reactor configurations. The NRC will perform additional experimental work for Combustion Engineering- (CE-) type plants through FY 1996 to confirm the uncertainties, scaling laws, and other pertinent parameters of the DCH phenomenon and other severe accident phenomena affecting the loss of containment capabilities during severe accidents. During

FY 1996-1997, the NRC will continue to apply the severe accident scaling methodology (SASM) to any experimental or analytical program designed to assess DCH and, when practical, will apply SASM to other NRC-sponsored experiments. This work will ensure that the results of experiments can be confidently extrapolated to full-scale reactor conditions.

In FY 1995, the NRC will continue research to address the conditions under which hydrogen-air-steam mixtures at high temperatures, produced during severe accidents, could sustain low speed combustion. This research will address the applicability of existing models for hydrogen combustion during certain severe accidents. In FY 1996, the NRC will continue to participate in the bilateral agreement with Japan to perform high-temperature, high-speed hydrogen combustion experiments to complement the low-speed combustion experimental program. These experiments will yield data on the increased detonability of hydrogen mixtures at elevated temperatures that might exist during a severe accident and which might threaten containment integrity. These data are necessary to confirm the projections of containment loads and structural performance during severe accidents.

During FY 1996-1997, the NRC will continue to participate in the RASPLAV international safety research project under the auspices of OECD. In this facility, up to 200 kg of prototypic reactor core material can be melted and made to interact with a simulated reactor pressure vessel lower head. Feasibility studies of cooling the reactor core materials from outside the lower head were performed earlier in an NRC-Russian Cooperative program. Based on this earlier work, new test apparatus will be constructed and testing carried out.

In FY 1996, the NRC will continue to participate in the experimental program carried out in the FARO facility in Italy. This facility is being used to perform large-scale tests to address the residual issues related to fuel coolant interactions, particularly ex-vessel fuel coolant interaction. In the FARO facility, prototypic material (corium, the term used for a molten mass of fuel from the core) is brought into contact with water in a vessel of representative size and strength. The NRC will obtain data on the rate of heat removal from the corium melt, the effectiveness of various quench mechanisms, the hydrogen generation rate, and the heat loading and temperatures of a simulated reactor pressure vessel. The morphology of the material remaining in the bottom of the test facility will be examined and used in validating the lower head analytical model.

In FY 1996, the NRC will use the VICTORIA fission product release and transport code and the MELCOR code to perform pre- and post-test analyses of the PHEBUS tests. The analyses will be part of the NRC in-kind assistance and services to PHEBUS under the international cooperative agreement between the NRC and the French Commissariat à l'Énergie Atomique. The NRC will continue to provide technical assistance and cooperation with the Commission at the European Communities fission product behavior program in the French PHEBUS test reactor. Such technical assistance includes providing online fission product measurement system, reviewing test plans and testing, and other assistance, as needed. The NRC will complete an independent peer review of the VICTORIA code in FY 1996.

In addition to experimental work, the NRC is developing analytical codes capable of modeling the severe accident phenomena. Among these is the MELCOR code. During FY 1996-1997, the NRC will continue to contribute to the internationally supported MELCOR Cooperative Assessment Program initiated in FY 1993 to support MELCOR code validation and maintenance. The NRC will continue to compare codes with the existing database and assess progress in reducing uncertainties in our understanding of severe accident phenomena.

In FY 1995, the NRC will continue to identify new data needs and modeling initiatives required for assessing severe fuel damage in reactor accidents. In FY 1996, the NRC will assimilate results and insights from all the available major experimental programs (ACRR, TMI, LOFT, PBF, NRU, CORA, PHEBUS) to identify the need for additional testing in the severe fuel damage assessment program.

Furthermore, the Commission's Severe Accident Policy calls for the examination of individual plant susceptibilities to severe accidents, the identification and evaluation of potential improvements in containment performance, and the execution of a program of research to reduce the uncertainties in the analysis of severe accidents. The results of that research will be used to confirm that the margins of safety inherent in existing regulations are, and will continue to be, adequate to protect the public health and safety.

During FY 1996-1997, in support of increased agency use of risk analysis to prioritize and resolve safety issues, the NRC will continue developing methods and applying advanced human reliability analysis, aging models, and operational events data to probabilistic risk assessments (PRA). Also during FY 1996-1997, the NRC will continue to maintain, support, and upgrade (as necessary) the severe accident risk analysis computer models, such as, MACCS, SARA, EVNTRE, and IRRAS. Risk analyses performed by staff and contractors in support of the assessment of safety issues will be reviewed. The NRC will continue to support the development of staff expertise in the application of PRA. Data from approximately three PRAs per year, submitted in the individual plant examination (IPE) process and other sources, will be loaded into the PC database (that supports SARA and IRRAS) for use in a variety of expected support activities.

In FY 1996, NRC structural reviewers will be provided guidance on how to address corrosion effects on aging and reliability of steel containments and steel containment liners. The NRC will prepare a report on damage mitigation and repair and will provide a reliability-based means to quantify current and future safety margins.

In cooperation with the Agency for Natural Resources and Energy of the Ministry of International Trade and Industry (MITI) of Japan, the NRC will test a model of a steel BWR containment to determine how and when it will fail. The model was fabricated in FY 1994, will be shipped and instrumented in FY 1995, and will be tested to failure in FY 1996. Also in cooperation with the Agency for Natural Resources and Energy of the MITI of Japan, the NRC will test a model of a pre-stressed concrete PWR containment to determine when it will fail. The model was designed in Japan in FY 1994, will be constructed and instrumented in the United States during FY 1995-1996, and will be tested to failure in FY 1998.

In FY 1996, the NRC will continue to evaluate licensee recommendations for improving the evaluation of containment performance, submitted as part of the individual plant examination (IPE) program. In FY 1996, the NRC will continue the joint RES and contractor team reviews of the remaining internal event IPE submittals covering all units. By the end of FY 1996, all or most of the internal event IPE reviews, significant accident management research, and severe accident research will be completed. In FY 1996, the NRC will continue to analyze the information from the review of the IPE submittals, categorize insights, and provide the results in a concise report. IPEs will also be reviewed to resolve existing generic safety issues on a plant specific basis, and, as appropriate, new generic safety issues will be identified for resolution. During FY 1996-1997, the NRC will continue reviewing licensee external event evaluation (IPEEE) reports.

A number of efforts are improving the NRC's ability to evaluate the effects of potential earthquakes on nuclear power plant operations. The results of this program are integrated into efforts to develop a unified seismic hazard assessment method. During FY 1996-1997, the NRC will determine magnitude, scaling and distance attenuation relationships using regression analyses and ground motion data sets from Eastern and Western U.S. earthquakes. These analyses will yield more physically based estimates of site effects than previous studies, and will reduce uncertainties in the seismic hazard and ground motion estimates. This and some of the other programs in earth sciences will keep the staff informed of advanced knowledge and new field observations. The limited amount of recorded data increases the importance that new insight and information from any significant earthquake provides. Such information may prompt NRC to reevaluate earlier licensing decisions or confirm assumptions made in earlier decisions.

Also during FY 1996-1997, the NRC will continue to develop a correlation between the seismic characteristics of near field geologic materials and the observed response, in order to investigate the influence of near surface geology on seismic site response. Results of this program will lead to an improved modeling of the wave scattering and propagation effects in the near surface material and will reduce uncertainties in the ground motion estimates at the site. These results will also be used in the unified seismic hazard assessment program, as applicable.

During FY 1996-1997, the NRC will determine where any large prehistoric earthquakes occurred along the Atlantic Seaboard. The NRC will use paleoseismic techniques similar to those used in the recent study determining the site-uniqueness of the 1886 Charleston earthquake. This will reduce the uncertainty in earthquake source zone identification and earthquake frequency predictions and strengthen our implementation of site licensing criteria and evaluation of seismic issues bearing on plant design.

During FY 1996-1997, the NRC will continue to support research activities of the U.S. Geological Survey and other organizations that address geological and seismological issues of regulatory significance, such as strong ground motion studies, fault segmentation studies and faulting, and paleoseismic studies in the New Madrid seismic zone. The NRC will also continue to evaluate and analyze the data collected from the National Seismographic Network, a long-term project to continuously improve the understanding of physical processes associated with the seismic activities, transmission of seismic energy, and site responses. The new data will enable the staff to develop and validate more accurate models to predict the transmission of seismic energy. The new models will reduce the uncertainty of current ground motion modeling and also improve upon the NRC's implementation of site licensing criteria and evaluation of seismic issues bearing on plant design.

During FY 1996-1997, the NRC will continue to determine attenuation characteristics of ground motion through shallow soils over bedrock. The data from small-to-moderate earthquakes will be obtained from seismographs installed at various levels in boreholes at Anza, California. The better modeling of the local site amplification phenomenon will reduce major uncertainty in the soil structure interaction analysis currently carried out to estimate the structural and component responses.

In FY 1995, the NRC will complete a cooperative effort with Electric Power Research Institute (EPRI) and DOE to develop a unified seismic hazard assessment method to characterize seismic hazard east of the Rocky Mountains based on seismic hazard studies from EPRI and Lawrence Livermore National Laboratory (LLNL). The results of this cooperative effort will be used to assess the seismic hazard of future nuclear power plant sites and to recalculate the probabilistic seismic hazard of all operating Eastern U.S. nuclear power plant sites as bases for probabilistic siting criteria for future nuclear power plants. The National Academy of Sciences will complete a review of the unified hazard assessment methodology by the end of FY 1996. A final report incorporating all comments will be completed in FY 1996. During FY 1995-1997 the NRC will recalculate the probabilistic seismic hazard at all Eastern U.S. nuclear power plant sites to develop technical bases for replacing the relative seismic hazard criteria with an absolute criterion in the seismic siting regulatory guide (draft Regulatory Guide DG-1015, "Identification and Characterization of Seismic Sources, Deterministic Source Earthquakes, and Ground Motion").

During FY 1996-1997, the NRC will use data from the satellite-based Global Positioning System to remeasure the station positions of the Crustal Motion Network. This data will be analyzed to determine initial estimates of crustal motions in the Eastern and Central U.S. Study of the crustal motions will lead to improved understanding of the physical processes associated with the seismic activity in the Eastern and Central U.S. where surface features or clearly identifiable seismic sources are absent. Such understanding of crustal motions could reduce the large uncertainty currently associated with the delineation of seismic sources in the Eastern and Central U.S.

During FY 1996-1997, the NRC will use data from NRC- and-industry sponsored tests on structures, piping systems, and components, and data obtained from actual earthquakes to revise NRC's damping recommendations. Specifically, the NRC has participated in activities of the American Society of Mechanical Engineers (ASME) to revise the pipe damping criteria in Appendix N of Section III of the Boiler and Pressure Vessel Code. The NRC is also reassessing the values of damping for major plant structures. Changes to some values appear to be appropriate.

In a joint venture with EPRI and the Taiwan Power Company, a cylindrical concrete model structure was built in a seismically active area near Hualien, Taiwan. The model and surrounding soil will be instrumented, and data recording and analysis will be conducted during FY 1995-1997.

During FY 1995-1996, the University of Texas at Austin will continue to perform tests to determine the behavior and strength of anchor bolts used in concrete for earthquake type loads. This work supports the implementation of NRC seismic program USI A-46, "Seismic Qualification of Equipment in Operating Plants." In FY 1997, the NRC will consult with national standards committees for any necessary revisions.

In cooperation with the Ministry of International Trade and Industry (MITI) of Japan, the NRC will participate in a seismic test of a large scale model of a main steam and feedwater system to check calculational methods and validate seismic failure mode assumptions. The test will be performed at Tadotsu Engineering Laboratory, the largest seismic shaking table facility in the world. During FY 1995-1996, the fabrication of the large scale model will be completed, the test on it will be conducted, and in FY 1996, the resultant test data will be evaluated. In FY 1995, the NRC will obtain test data from the tests already done in FY 1993 on computer systems and test data from tests to be done on shutdown cooling systems to validate the seismic fragility of these components and systems.

During FY 1996-1997, the NRC will continue to participate in an OECD program on International Standard Problem (ISP) on shear walls. In this program, results of two large-scale shear walls tests conducted in Japan will be used to verify analyses and modeling techniques used by participants. Beginning in FY 1996, this program will also be extended to include ISP on the soil-structure interaction analyses.

During FY 1996-1997, in a collaborative arrangement with MITI and the Nuclear Power Engineering Corporation (NUPEC), the NRC will participate in seismic tests of large-scale concrete and prestressed concrete containment structures to check calculational methods and performance of the containment and liner during shaking. The design, fabrication, and construction will take place during FY 1995-1996 with tests during FY 1996-1997.

Once research projects are completed, the results are incorporated into the regulatory process as expeditiously as practicable. This involves (1) resolving generic safety issues related to reactor and plant system design and plant operations; (2) developing regulations, policy statements, and regulatory guides for nuclear power plant regulation; and (3) developing the technical basis for radiation protection standards to minimize the adverse consequences of exposure to ionizing radiation from licensed reactor activities. Changes to regulatory requirements, policy statements, and guidance for reactor facilities are closely coordinated with other NRC offices, the nuclear industry, and the public.

Generic safety issues (GSIs) involve safety concerns that may affect the design, construction, or operation of all, several, or a class of reactors or facilities and may have potential for safety improvements and issuance of new or revised requirements or guidance. Resolutions of GSIs are transmitted to the industry through issuance of generic letters or rule changes. Implementation procedures for resolving GSIs are occasionally developed in conjunction with such utility organizations as the Electric Power Research Institute.

The staff will report to the Commission annually on the resolution of GSIs. Each year all remaining GSIs, including new issues identified, will be prioritized. During FY 1996-1997, three generic safety issues are scheduled to be resolved.

Generic Safety Issues Scheduled
for Resolution by Fiscal Year

Issue Priority	Fiscal Year 1995	1996	1997	TBD	Cumulative Total
High	1	1	0	1	3
Medium	4	1	1	0	6
Nearly Resolved	3	0	0	2	5
Total	8	2	1	3	14

Semiannually, the NRC will perform an integrated review of the priorities and schedules for all reactor and reactor radiation protection and health effects rulemaking actions to ensure that the highest priority efforts are conducted. As final rules are completed, uninitiated rulemaking actions having the highest priority will be selected for rulemaking actions.

During FY 1995-1996, the NRC will conduct ten reactor-related rulemakings and issue proposed and/or final rules and the associated regulatory guides where applicable for the following: (1) Table S-3 and Table S-4 in 10 CFR Part 51, Addition of Radon-222 and Technetium-99 Radiation Values; (2) Amend 19.32 and 2.111 to conform to Section 401 of the Energy Reorganization Act; (3) Nuclear Power Reactor Physical Protection Requirements Update 10 CFR Part 73.55; (4) Safety Requirements for Reactor Coolant Pump Seals; (5) Procurement of Commercial Grade Items by Nuclear Power Plant Licensees, 10 CFR Part 21; (6) Revise Regulations to Eliminate Unnecessary Reporting Requirements to Reduce Regulatory Burden, 10 CFR Part 50, 55, 73; (7) Criteria for Extraordinary Nuclear Occurrence, 10 CFR Part 50; (8) Revision of 10 CFR Parts 19 and 20, Clarifying Amendments; (9) Generic Decommissioning Rulemaking for Reactor Facilities Under a Possession Only License (POL), 10 CFR Part 50; and (10) Frequency of Medical Examination for Use of Respiratory Protection Equipment, 10 CFR Part 20-1703.

During 1996-1997, the NRC will continue to work on responding to two petitions for rule changes in emergency preparedness. These changes deal with the annual exercise frequency and licensee audits. Also during FY 1996-1997, the NRC will update the regulatory guides that address toxic chemicals and explosive mixtures. This work will include revisions to Regulatory Guides 1.78, 1.95, and 1.91.

During FY 1996-1997, the NRC will develop approximately five regulatory impact analyses (RIAs) each year in support of reactor-related rulemaking and other generic requirements as required by the backfit rule. In addition, it will continue to support the development of all NRC RIAs by preparing generic guidance, generic methodology, and generic cost estimates.

During FY 1996-1997, the NRC will continue to implement changes in existing reactor regulations and regulatory requirements that have a large economic impact but that can be eliminated or modified without significantly reducing safety. The changes will result in a revision of a regulation, a Standard Review Plan section, or a regulatory guide, and will allow licensees to redirect resources to more important safety issues.

During FY 1996-1997, the NRC will continue determining the biological effects of "hot particles" contamination of the skin and establishing performance criteria to control it. In addition, the NRC will review and evaluate reports on this subject by the National Council on Radiation Protection and Measurements (NCRP) and the International Council on Radiological Protection (ICRP) and recommend an appropriate course of action. The NRC will also develop and implement testing and accreditation criteria for extremity dosimetry, and will develop performance criteria, standards, and guidance on in vivo and in vitro bioassay assessment.

During FY 1996-1997, the NRC will continue assessing industry and DOE research and development on dose reduction at nuclear power plants focusing on high-dose worker groups. The primary activity will be the continued support for the Brookhaven National Laboratory ALARA Center. During FY 1996-1997, the NRC will develop recommendations on the needed changes to regulations and regulatory guidance on the effect of the reduced occupational worker dose limit recommended by ICRP and the NCRP.

During FY 1996-1997, the NRC will continue studies on placental transfer and other parameters affecting dose to embryo/fetus for selected radionuclides. The results of these studies will be used to improve calculation of embryo/fetus dose from maternal intake in order to implement exposure criteria for pregnant workers.

During FY 1996-1997, the NRC will continue to support the review and analysis of health effects information and provide research and operational support funds for the working groups of the ICRP, the NCRP, the Committee on Interagency Radiation Research and Policy Coordination (CIRRPC), and the National Academy of Sciences. These organizations are developing and coordinating recommendations on a wide variety of subjects in radiation protection, including hot particles, potential exposure situations, naturally occurring and accelerator-produced radioactive material, and dose-risk relationships, all of which are used by the NRC in rulemaking and guidance development.

During FY 1996-1997, the NRC will continue to provide annual statistical summaries of worker radiation exposure data as part of the Radiation Exposure Information Reporting Systems, and will continue to process termination reports and implement the new 10 CFR Part 20 reporting requirements. During FY 1995-1996, the NRC will work with the National Cancer Institute and other organizations to develop and implement a national worker exposure database to support health effects studies. The NRC will also continue to monitor health effects research and operating experience and develop appropriate reactor- related regulations or regulatory guidance to address identified needs based on this information.

During FY 1995-1996, the NRC will issue addenda to NUREG-1307, "Nuclear Power Reactor Decommissioning Costs," as required by 10 CFR Part 50, to ensure licensees have the latest waste burial costs that are corrected for inflation. In FY 1995, the NRC will complete a reexamination of the original BWR and PWR technology, safety, and cost decommissioning reports, NUREG/CR-0672, "Technology, Safety, and Costs of Decommissioning a Reference Boiling Water Reactor Power Station," and NUREG/CR-0130, "Technology, Safety, and Costs of Decommissioning a Reference Pressurized Water Reactor Power Station." These reports will provide the basis for determining if reactor regulations associated with decommissioning financial assurance requirements need updating.

REACTOR PROGRAM: Reactor Regulation

Independent Analysis of Operational Experience

	FY 1994 Enacted	FY 1995 Enacted	FY 1996 Estimate		FY 1997 Estimate	
			Request	Change from FY 1995	Planning Estimate	Change from FY 1996
Budget Authority by Function ($K)						
Salaries and Benefits	6,149	5,880	6,030	150	5,831	-199
Contract Support	7,582	7,939	7,689	-250	7,484	-205
Travel	309	221	227	6	221	-6
Total	14,040	14,040	13,946	-94	13,536	-410
Full-Time Equivalent Employment	71	68	68	0	67	-1

The Office for Analysis and Evaluation of Operational Data (AEOD) identifies, evaluates, and responds to potentially significant events and safety concerns involving U.S. commercial nuclear power reactors, based on events reported to the NRC by its licensees. It also supports the agency's Committee to Review Generic Requirements (CRGR), whose efforts include review of generic reactor requirements and backfit considerations.

Diagnostic evaluations supplement the use of systematic assessments of licensee performance, performance indicators, and other data to evaluate specific utility programs and enable NRC senior management to make more informed assessments of overall nuclear power plant performance. Alternatively, a special evaluation may be conducted for this purpose when a licensee performs an independent diagnostic level self assessment. These assessments assist the NRC in taking appropriate regulatory actions. During FY 1996-1997, the NRC will conduct up to two diagnostic evaluations (DEs) or special evaluations (SEs) each year and will participate in a limited number of NRC special team inspections and special AEOD technical studies, when fewer than two DEs (or SEs) are conducted in a year. The NRC will also maintain Diagnostic Evaluation Program Management Directives, associated guidance, and DE rosters; incorporate the lessons learned from completed DEs; and document the status to close out generic staff actions established as a result of a Diagnostic Evaluation Team or Special Evaluation Team and assigned by the Executive Director for Operations (EDO).

AEOD also oversees the agency's incident and accident investigation programs to ensure that significant and extraordinary safety-significant operational events involving nuclear power reactors licensed by the NRC are investigated in a systematic and technically sound manner and that information is obtained on the causes of the events, including those involving NRC activities, so that the NRC can take corrective actions that are timely and effective. For events that could be of major significance, an Accident Review Group or Incident Investigation Team is established that is independent of the region and the program office. For investigating less significant operational events, an Augmented Inspection Team is established under regional direction and complemented by headquarters personnel, as necessary. During FY 1996-1997, the NRC will support Incident Investigation Teams (IITs) as required; maintain the Incident Investigation Program Management Directives, associated manuals, and IIT rosters, and incorporate the lessons learned from completed IITs; and periodically train IIT roster members and leaders. The NRC will continue to independently review the adequacy of the resolution of staff actions assigned by the EDO for IITs and document the status of IIT-initiated staff actions until they are closed. The NRC will also implement and maintain the programmatic actions needed to activate and support an Accident Review Group reporting to the Commission to respond to an event of extraordinary safety significance at a licensed reactor facility.

The NRC conducts incident response activities to ensure that it is prepared to carry out its role in a radiological emergency at NRC-licensed nuclear reactors, that licensee responses are consistent with their responsibilities, and that NRC responses are coordinated with other Federal response activities and State and local government activities. During FY 1996-1997, the NRC will (1) maintain, improve, and implement the NRC incident program in response to actual operational events within the industry; (2) operate the NRC Operations Center 24 hours a day with reactor systems engineers capable of receiving event reports and recognizing and communicating problems and emergencies to management; (3) coordinate efforts to improve the functionality of the Federal Radiological Emergency Response Plan, the Federal Response Plan, and agreements between the NRC and other State, Federal, and international organizations and countries on responses to nuclear events; (4) conduct a State Outreach Program to improve the States' understanding of how the NRC, as the Lead Federal Agency (LFA), will manage the Federal response to a severe accident at a nuclear facility; (5) maintain and improve the NRC Operations Center and regional functional procedures, response tools, and training; (6) evaluate and assess headquarters and regional incident response programs; (7) participate in the Continuity of Government Program; (8) participate in full-scale licensee and State emergency preparedness exercises with each region; and (9) provide the operational support and contract management necessary for agency response activities.

A standardized training program on the technical and organizational aspects of emergency response has been developed and continues to evolve. During FY 1996-1997, the NRC will continue to maintain and improve standard procedures and technical tools and train NRC staff at headquarters and in the regions and staff from other Federal agencies that support the NRC during response activities. The NRC will also continue to maintain the facilities, resources, and communications equipment necessary to support the NRC's response needs; participate in full-scale licensee and State emergency preparedness exercises with each region; and coordinate the preparation and distribution of "International Nuclear Event Scale" reports. In addition, the NRC will exercise the primary responsibility for changes, interpretations, and development of immediate notification requirements.

The evaluation of operational experience is conducted to collect, analyze, and disseminate information about operational safety data associated with NRC commercial nuclear power reactor licensees. Operational experience from NRC licensees and foreign sources is reviewed to identify either plant-specific or generic safety issues resulting from significant events or situations that warrant detailed evaluation. These issues are further analyzed to assess the root causes of the identified deficiency and the adequacy of corrective actions implemented and planned and to identify those safety concerns that may warrant regulatory attention.

The NRC will continue to oversee power reactor operational experience and advise the program office or region when appropriate. During FY 1996-1997, the NRC will continue to review nuclear power reactor licensee event reports (LERs), extensive documentation of events, NRC inspection reports, U.S. industry reports, and foreign reactor reports. In addition, the NRC will continue to issue case studies, trend and pattern reports, engineering evaluations, and technical reviews. Results, findings, and recommendations for actions based on these studies will be widely disseminated to the nuclear industry and the public in a timely manner. The NRC will continue collecting, technically screening, and coding approximately 1,500 commercial power reactor event reports each year into databases for agency access, and will continue streamlining the current system for LER data processing. During FY 1996-1997, the staff will develop an enhanced capability to code and retrieve human performance, common-cause failure, and precursor data. During this period, the staff will also revamp licensee event reporting through rulemaking to improve reporting of human performance, common-cause failure, safety-train availability, and precursor data. While information about important events will continue to be required to be reported, changes to reporting requirements are intended to eliminate events of little significance. The NRC will develop and implement the capability to analyze and evaluate equipment reliability. In addition, during this period, the staff will provide risk and reliability analyses of plant performance utilizing agency and industry databases. These analyses routinely use probabilistic risk assessment results and methods to characterize risks associated with selected equipment and human performance data.

During FY 1996-1997, the NRC will prepare trend information on systems and equipment performance, initiating event frequencies, and human performance to monitor risk implications of changes in industry performance. This includes assessing precursors to severe accident sequences. Periodically, the NRC will provide trend data associated with selected safety issues to identify changing safety trends and the effectiveness of regulatory initiatives. The NRC will also continue to feed back information to the international community through the Nuclear Energy Agency's Incident Reporting System, to the Congress by Abnormal Occurrence reporting, and to the NRC staff by special reports.

Reactor events that are considered to be significant from the standpoint of the public health and safety will be reported to the Commission with recommendations that they be considered as "abnormal occurrences." On a quarterly basis, abnormal occurrences will be reported to the Congress and the public.

The NRC will continue to coordinate safety analysis activities with other organizations, such as the Electric Power Research Institute, the Institute of Nuclear Power Operations, and owners groups and provide results to those organizations, as appropriate. Component failure data from the Nuclear Plant Reliability Data System, a database voluntarily supported by the U.S. nuclear power plant industry and maintained by the Institute of Nuclear Power Operations, will continue to be analyzed on a risk-significant basis to identify component attributes that may signify an unrecognized safety concern.

On the basis of the comprehensive and systematic review of all the reactor licensee event reports, significant operating events are identified and selected for further in-depth evaluation. The evaluation assesses the root causes of the identified deficiency, the safety significance and generic implications of the deficiency, and the adequacy of corrective actions. In-depth technical evaluations of selected components, systems, system interactions, and human performance will be performed on the basis of operating events.

Recommendations are made to prevent recurrence of those events that have the potential to progress to more safety-significant reactor transients. The results, findings, and recommendations for actions based on these evaluations of operating experience are documented in technical study reports, which are widely disseminated to the nuclear industry and the public on a timely basis. The recommendations from these studies are formally tracked, and their status is periodically reported to the Commission.

The NRC will continue to emphasize investigating root causes, the contribution of human factors, and the determination of the risk significance of operational events. By emphasizing the underlying causes of significant operating events and the practices that can prevent recurrence, the lessons of experience can be more effectively communicated to the nuclear power plant industry to improve plant safety. Failure data for risk-significant components will be analyzed for evidence of safety-significant trends. Enhanced analysis methods will be applied to the data review process to improve the timeliness of feedback to the industry. Quantification of the risk significance of events during power operation and reactor shutdown will be enhanced. The effectiveness of NRC and industry actions to resolve safety concerns will be examined through the evaluation and trending of operational experience data. This will also help ensure that lessons learned from operating experience have not been lost with time. Accident sequence precursor analyses will be used when practicable. As appropriate, actions will be initiated to resolve pertinent safety issues.

The NRC conducts activities aimed at developing and implementing a method of identifying, as early as practicable, individual nuclear power plants, or groups of plants, whose performance may warrant special (either increased or decreased) regulatory attention. Performance indicators are intended to provide ready information concerning trends in nuclear power plant performance and to assist NRC management in identifying poor and/or declining safety performance, as well as good and/or improving safety performance.

For the NRC's performance indicator program, the following indicators are used: automatic scrams while the reactor is critical, selected safety-system actuations, significant events, safety-system failures, plant forced-outage rates, equipment forced-outage rates per 1,000 critical hours, collective radiation exposure, and cause codes extracted from licensee event reports. Semiannual reports showing trends in performance and comparisons with appropriate industry averages for each licensed nuclear power plant and each individual indicator will be provided to NRC senior management during FY 1996-1997. These reports are disseminated to NRC management, the Commission, and licensees and are available to the public. The NRC will continue its review, evaluation, and refinement, as needed, to maintain the performance indicator program as a credible tool for assessing trends in plant performance.

Operational experience at all NRC-licensed activities is collected, screened, and analyzed. Operational experience at foreign power reactors is screened and independently analyzed for safety significance and applicability to the U.S. nuclear program. The NRC will continue to provide information about foreign events to U.S. organizations and to report U.S. experience to foreign organizations through the Nuclear Energy Agency and the International Atomic Energy Agency's incident reporting system and through bilateral agreements. Additionally, nuclear power plant events classified at the alert level or higher will be reported via the International Nuclear Event Scale (INES). The limited U.S. participation in this information sharing system is anticipated to continue during FY 1996-1997. Attention will continue to be focused on the feedback of operating experience by the NRC, the industry, and each licensee so that the lessons of experience can be used to prevent serious nuclear incidents in the future. The NRC will continue to develop improved methods for providing feedback on operating experience during FY 1996-1997 through such means as increased interaction with reactor owners groups, the highlighting of risk significance, workshops, and coordination with industry regarding feedback originated by the industry. The NRC will continue to use and upgrade operational and reliability data storage and retrieval systems. Information primarily from two commercial power reactor reporting systems is used for the analysis of trends and patterns. The first system is the Licensee Event Reporting System, which is required by NRC regulation (10 CFR 50.73). Licensee event reports (LERs) are based on certain events of an established significance level at reactor sites. The data from these reports are coded and entered into data bases to capture the sequence of events, the failures that occurred, the causes of the events, and corrective actions to avoid similar events in the future. The NRC will continue streamlining the current system for processing LER data. In FY 1996, the NRC will continue to improve its capability to code and retrieve human-performance, common-cause, and precursor data. Licensee event reporting will be revised through rulemaking to focus on these areas and to eliminate events of little significance. The NRC will also continue to upgrade the automated data processing capabilities for storing and retrieving LERs and other operating experience information.

The second reporting system is the Nuclear Plant Reliability Data System (NPRDS), which captures events of lesser significance, specifically individual component failures that meet a safety-significance threshold. The staff is discussing with the Institute of Nuclear Power Operations and industry representatives the feasibility of implementing a complementary database, linked to the NPRDS, to support reliability and probabilistic safety analysis types of activities. The NRC will continue to analyze both databases to detect trends in the safety performance of domestic plants and to identify specific issues and corrective actions to improve or maintain safe operations. With more than 100 reactor-years of operation added annually, these data bases will grow and continue to be the primary systems to reveal trends in equipment and personnel performance.

During the past year, the NRC developed a reliability- and risk-based approach to analyzing these data. Insights from probabilistic risk assessment are used to identify components, systems, accident initiators, and safety issues which can be analyzed to assess reliability risk trends. Where available, actual operating experience is used to assess equipment performance. This work will be refined and fully implemented to maintain up-to-date safety data trends. The NRC is planning to combine the results of this activity with the Accident Sequence Precursor program to better identify risk-significant trends in the U.S. nuclear industry.

The Committee to Review Generic Requirements reviews generic requirements for power reactors and considers the feasibility of backfitting new requirements, as applicable. During FY 1996-1997, this committee will continue to provide agency-wide review and recommendations to the Executive Director for Operations regarding approval or disapproval of proposed changes to generic requirements and staff positions applicable to power reactors with the objectives of reducing or eliminating any unnecessary burdens placed on licensees, reducing the exposure of workers to radiation in implementing some requirements, and conserving NRC resources while ensuring adequate protection for public health and safety and furthering the review of new, cost-effective requirements and positions.

Technical Training and Qualification

			FY 1996 Estimate		FY 1997 Estimate	
	FY 1994 Enacted	FY 1995 Enacted	Request	Change from FY 1995	Planning Estimate	Change from FY 1996
Budget Authority by Function ($K)						
Salaries and Benefits	2,201	2,190	2,244	54	2,201	-43
Contract Support	4,540	4,728	4,573	-155	4,502	-71
Travel	60	78	80	2	78	-2
Total	6,801	6,996	6,897	-99	6,781	-116
Full-Time Equivalent Employment	25	25	25	0	25	0

This activity provides technical training for formal NRC staff qualification in support of the reactor program. The NRC will continue to maintain the Technical Training Center (TTC) facility and manage the technical training program for NRC staff. Curriculum areas in support of the reactor program will be maintained in reactor technology, probabilistic risk assessment, engineering support, radiation protection, security and safeguards, and regulatory skills. New courses will be developed and existing courses will be modified to meet new or changing needs identified by the NRC line organization. Training will also be provided to other Federal, State, and foreign regulatory counterpart employees on a space-available basis.

A spectrum of reactor technology training will be provided for the General Electric, Westinghouse, Combustion Engineering, and Babcock and Wilcox reactor designs to meet the highest priority agency needs, including an integrated series of classroom and simulator courses for NRC staff. Specialized technical training will be provided to meet continuing and reactive training needs.

The reactor technology training curriculum will continue to include a spectrum of approximately 45 courses ranging in duration from 4 days to 3 weeks. Initial reactor technology training and refresher training will be provided each year to NRC inspectors, reactor operator license examiners, and other staff in formal qualification programs. In addition, a minimal amount of technical training will be provided to NRC technical managers. Training of headquarters and regional reactor inspectors, operator license examiners, and response staff on vendor-specific emergency operating procedures will continue during FY 1996-1997. Major curriculum adjustments to best satisfy the highest priority regional and program office training needs will continue during FY 1996-1997.

The Technical Training Center (TTC) will continue to respond to reactive training needs in reactor technology as identified by agency management through forums such as the Training Advisory Group. During FY 1996-1997, the NRC will provide minimal technical training to support the NRC Technical Intern Program and other special programs. This training will be provided once annually in one reactor technology area. During this period, necessary technical training will be provided in specialized areas to supplement the initial training provided to inspectors of a particular category. This training provides selected inspectors with specific expertise in areas for which all inspectors do not require the expertise.

The NRC will develop and implement new and expanded technical training in areas identified by program offices and regions. This includes training to support the agencywide Probabilistic Risk Assessment (PRA) implementation plan and new training determined to be necessary by technical training needs surveys. In addition, reactor concepts training will be provided for employee orientation and news media seminars will be provided in support of the NRC public affairs function.

During FY 1996-1997, training materials for courses in reactor technology will be maintained and improved and course examination question banks and new course modules will be developed to support operational feedback on the agency's current technical issues. The NRC will continue to maintain full-scope training simulators at the TTC to support NRC initial qualification and refresher programs. This incudes maintaining the operability, reliability, and performance of the simulator hardware and software and maintaining and updating the infrastructure for simulation equipment. Performance of NRC full-scope simulators, particularly in the thermal hydraulic, reactor core, and containment response areas, will continue to be updated as necessary to meet NRC reactor technology training needs. This will include replacing older simulation models to improve performance and make the models transportable to other simulation platforms.

The NRC will continue development of workstation-based simulation to show parameters, system responses, and scenarios not suitable for full-scope simulator demonstrations. This effort, which enhances NRC understanding of complex events, involves the use of advanced simulation codes and establishment of a simulation platform capable of providing high-fidelity simulation of multiple light-water reactor designs to meet NRC reactor technology training needs. During FY 1996-1997, the NRC will continue to develop TTC reactor technology instructors through completion and maintenance of formal qualification status in two reactor technology areas. This includes completion of initial qualification and maintenance of qualification through current knowledge of events, technical issues, and operational feedback.

Investigations, Enforcement, and Legal Advice

			FY 1996 Estimate		FY 1997 Estimate	
	FY 1994 Enacted	FY 1995 Enacted	Request	Change from FY 1995	Planning Estimate	Change from FY 1996
Budget Authority by Function ($K)						
Salaries and Benefits	5,390	5,306	5,437	131	5,315	-122
Contract Support	10	11	11	0	11	0
Travel	334	488	501	13	489	-12
Total	5,734	5,805	5,949	144	5,815	-134
Full-Time Equivalent Employment	60	59	59	0	59	0

The NRC Office of Investigations investigates allegations of wrongdoing by NRC reactor licensees; the NRC Office of Enforcement ensures compliance with regulations and license conditions, obtains prompt correction in areas of noncompliance, deters further noncompliance, and encourages reactor licensee to improve performance; and the NRC Office of the General Counsel provides legal assistance (including representation in all associated administrative and judicial proceedings and rulemaking activities) on all matters affecting NRC reactor licensees.

All findings and conclusions that result from investigations are sent to the appropriate program office and the Office of Enforcement for review of the issues involved and a determination as to whether enforcement action is warranted. The Director, Office of Investigations, refers suspected or alleged criminal violations concerning NRC licensees and others within the NRC's regulatory jurisdiction to the U.S. Department of Justice.

The NRC will continue to investigate allegations of wrongdoing by NRC reactor licensees and others within its regulatory jurisdiction. The current workload consists of approximately 130 active reactor cases. Approximately 170-190 reactor cases are expected to be opened each year during FY 1996-1997. The NRC will continue to refine, administer, and maintain quality control standards for investigations. The staff will continue to apprise the Commission and appropriate agency offices of matters under investigation that may affect the public health and safety or other aspects of the agency's mission. The staff will maintain liaison with other agencies and organizations to ensure the timely exchange of information of mutual interest and refer matters judged to be criminal to the U.S. Department of Justice.

The NRC will continue to implement an enforcement program with support from the regional offices. Activities include overseeing and evaluating regional enforcement actions; coordinating and developing regional enforcement actions and recommendations; evaluating potential enforcement cases; reviewing inspection and investigation reports and confirmatory action letters; initiating and processing notices of violations, civil monetary penalties, and various enforcement orders; reviewing draft regulations, inspection guidance, and other initiatives for their effect on the enforcement process and providing advice and guidance on related enforcement issues; providing assistance to the Office of Nuclear Reactor Regulation on orders modifying licenses; and assisting the Office of the General Counsel in the administrative hearing process, including presenting testimony.

The NRC expects to consider between 100 and 130 reactor enforcement actions each year during FY 1996-1997. As the number and types of enforcement actions taken in any period of time are a function of the number of licensees and the licensees' performance, it is difficult to predict future activity levels. However, previous enforcement activity has been as follows:

Fiscal Year	Reactor Enforcement Actions Considered	Resulting Civil Penalties	Orders Issued
1992	129	45	0
1993	111	45	0
1994	129	42	6

The Office of Enforcement will continue to develop and promulgate enforcement policy, including the maintenance of an enforcement manual. The basic manual was issued in May 1990 and updated in September 1994; additional sections and refinements based on experience will be promulgated in subsequent years. The staff will continue to review Commission directives for impact on the enforcement policy or program and make changes as necessary. The staff will complete its review of the enforcement program in FY 1995. During FY 1996-1997, the NRC will implement the recommendations as appropriate. During FY 1996-1997, the NRC will continue to monitor actions filed with the U.S. Department of Labor (DOL) under Section 211 of the Energy Reorganization Act, coordinate with DOL, and develop enforcement actions where there are properly supported findings of discrimination. During this period, the staff will also maintain data generated in the enforcement process to monitor the enforcement program and to evaluate reactor licensees to identify weak performers who require greater NRC oversight.

The Office of the General Counsel (OGC) will continue to provide legal assistance to the NRC staff with respect to the staff review related to licensing, construction, operation, enforcement and decommissioning of nuclear facilities, as well as promulgation and amendment of NRC regulations and guides pertinent to the aforementioned matters. The OGC will represent the NRC staff in adjudications arising from proposed licensing and enforcement actions; represent the Commission in lawsuits arising from adjudicatory and rulemaking decisions relating to reactors; and provide legal analyses of regulations, statutes, and cases relevant to NRC activities.

REACTOR PROGRAM: Reactor Regulation

Independent Review

			FY 1996 Estimate		FY 1997 Estimate	
	FY 1994 Enacted	**FY 1995 Enacted**	Request	Change from FY 1995	Planning Estimate	Change from FY 1996
Budget Authority by Function ($K)						
Salaries and Benefits	4,290	3,884	3,984	100	3,811	-173
Contract Support	843	536	519	-17	504	-15
Travel	287	291	299	8	291	-8
Total	5,420	4,711	4,802	91	4,606	-196
Full-Time Equivalent Employment	46	42	42	0	41	-1

The Atomic Safety and Licensing Board Panel (ASLBP) is a statutory office of the NRC and comprises administrative judges who, sitting alone and in three-member boards, conduct adjudicatory hearings pursuant to a number of statutes including the Administrative Procedure Act; the Atomic Energy Act of 1954, as amended; the National Environmental Policy Act of 1969, as amended; and the Program Fraud Civil Remedies Act.

The boards hear and decide requests to grant, suspend, revoke, or amend licenses to construct and operate nuclear power plants and preside over rulemaking hearings. Hearings address issues involving health, safety, the environment, enforcement, civil penalties, antitrust, and emergency planning. Single administrative judges are authorized to decide cases as directed by the Commission. Current subject matters include operating license amendments and enforcement cases.

During FY 1996-1997, the ASLBP will preside over rulemaking hearings and conduct adjudicatory hearings usually at or near the site where the dispute arose. Issues to be addressed will include whether to grant, suspend, revoke, or amend licenses to construct and operate nuclear power plants as well as the conduct of other licensed activities. The Panel will maintain and train a legal and technical staff adequate to ensure the continuing availability of due process in antitrust, enforcement, licensing, decommissioning, and other disputes requiring independent resolution. The Panel will provide advice on adjudicatory matters, other proceedings, and on other regulatory and administrative matters as requested; and will review and make suggestions for amending regulations to expedite the hearing process and to make it more understandable and easier to use, consistent with the recommendations of the Administrative Conference of the United States.

The Advisory Committee on Reactor Safeguards (ACRS) has statutory responsibilities as described in the Atomic Energy Act of 1954, as amended. The ACRS independently reviews the licensing and operation of production and utilization facilities and related safety issues and advises the Commission accordingly. The ACRS relies on highly qualified members, specialized consultants, and a cadre of technical and administrative support personnel.

During FY 1996-1997, the ACRS will review technical issues associated with early site permit application and proposed revisions to siting requirements related to the decoupling of siting from design and the use of the improved source term.

The ACRS will review issues associated with replacement of analog instrumentation and control (I&C) systems with digital I&C systems in operating plants, and with the use of digital systems for control and safety functions, including identification of failure modes, software qualification and hardware environmental qualification. In addition, the ACRS will consider the results of the National Academy of Sciences study on the use of digital systems in nuclear power plants. The ACRS will also review and advise on identification, prioritization, and resolution of generic safety issues. In addition, it will review fire protection issues related to operating plants, the need to revise Appendix R to 10 CFR Part 50, and matters related to the development of performance-based regulations. The ACRS will review selected technical training programs at the NRC Technical Training Center in areas such as digital I&C and probabilistic risk assessment.

The ACRS will consider selected elements of the reactor safety research program, and programs and regulatory guidance associated with the implementation of the Commission's Severe Accident Policy and the submittal of individual plant examinations and individual plant examinations of external events. The ACRS will also consider the implementation of the Commission's Safety Goals Policy, and matters related to the use of the probabilistic risk analysis in the regulatory decision-making process. The ACRS will also continue to monitor the NRC programs of thermal hydraulic code development, use, and maintenance. The ACRS will review issues related to the use of high-burnup fuel in current and future nuclear power plants.

The ACRS will review the causes, consequences, and inservice inspection changes related to corrosion on containment, and the degraded piping systems and components caused by erosion and corrosion. The Committee will also examine the regulatory treatment of crack penetration in reactor vessel heads, steam generator tubes, reactor vessel internals, and primary system components.

The ACRS will review issues pertaining to the revision and implementation of the Pressurized Thermal Shock (PTS) Rule. The ACRS will also monitor the work associated with motor-operated-valve reliability.

The ACRS will also review and comment on specific regulatory issues referred to it by the Commission. In addition, the ACRS on its own initiative will review and advise on specific generic matters and nuclear facility safety-related items.

The ACRS will review programs to develop and implement risk-based technical specifications, issues associated with the development and implementation of performance indicators and the accident sequence precursor program, and evaluations of reactor operational experience and implementation of the lessons learned. The Committee will review selected reports of Augmented Inspection Teams and Incident Investigation Teams related to significant operating events and will review activities of the NRC regional offices related to the safe operation of licensed nuclear power plants. As appropriate, the ACRS will review plant restarts.

The ACRS will review decommissioning issues and decommissioning plans. The Committee will review matters related to the implementation of the maintenance rule. It will also review revised reactor pressure vessel integrity requirements based on an updated materials database and on lessons learned from the review of the Yankee Rowe reactor pressure vessel embrittlement issues.

The ACRS will also review security and protection requirements associated with the insider threat and onsite dry cask storage at production or utilization facilities.

REACTOR PROGRAM: Reactor Regulation

General Support

	FY 1994 Enacted	FY 1995 Enacted	FY 1996 Estimate		FY 1997 Estimate	
			Request	Change from FY 1995	Planning Estimate	Change from FY 1996
Budget Authority by Function ($K)						
Salaries and Benefits	13,598	13,311	13,493	182	12,767	-726
Contract Support	671	1,172	1,256	84	1,187	-69
Travel	1,561	1,424	922	-502	898	-24
Total	15,830	15,907	15,671	-236	14,852	-819
Full-Time Equivalent Employment	170	167	164	-3	158	-6

This activity encompasses efforts to supervise and coordinate the policy development and operational activities of the Reactor Regulation Cost Center. It also includes all information technology-related efforts for the Offices of Nuclear Reactor Regulation and Nuclear Regulatory Research in support of power reactor regulation.

Standard Reactor Designs Cost Center

			FY 1996 Estimate		FY 1997 Estimate	
	FY 1994 Enacted	FY 1995 Enacted	Request	Change from FY 1995	Planning Estimate	Change from FY 1996
Budget Authority by Function ($K)						
Salaries and Benefits	16,692	15,115	14,923	-192	12,553	-2,370
Contract Support	25,230	22,344	19,607	-2,737	18,531	-1,076
Travel	392	393	403	10	392	-11
Total	42,314	37,852	34,933	-2,919	31,476	-3,457
Budget Authority by Activity ($K)						
Standard Reactor Design Certification	19,093	17,772	15,757	-2,015	13,194	-2,563
Standard Reactor Safety Assessment	20,102	17,059	16,074	-985	15,249	-825
Legal Advice	263	260	267	7	260	-7
Independent Review	1,096	962	987	25	968	-19
General Support	1,760	1,799	1,848	49	1,805	-43
Total	42,314	37,852	34,933	-2,919	31,476	-3,457
Full-Time Equivalent Employment by Activity						
Standard Reactor Design Certification	131	126	120	-6	97	-23
Standard Reactor Safety Assessment	34	24	23	-1	22	-1
Legal Advice	3	3	3	0	3	0
Independent Review	11	10	10	0	10	0
General Support	13	13	13	0	13	0
Total	192	176	169	-7	145	-24

This cost center supports future licensing activities associated with standard reactor designs; ensures that certified standard reactor designs, when properly sited and constructed, will adequately protect the public health and safety and the environment; and ensures that the combination of industry and NRC research provides the technical bases for timely and sound rulemaking and regulatory decisions to support NRC design certification activities. NRC's standard reactor design efforts include technical reviews conducted as part of the programmatic activities of the Offices of Nuclear Reactor Regulation and Nuclear Regulatory Research, independent reviews by the Advisory Committee on Reactor Safeguards, and legal advice and adjudicatory activities by the Office of General Counsel and the Atomic Safety and Licensing Board Panel, respectively.

This cost center includes five major activities: standard reactor design certification; standard reactor safety assessment; legal advice; independent review; and general support.

Standard Reactor Design Certification

The standardization of nuclear power plant designs can increase the safety, reliability, and availability of nuclear power plants. Standardization will allow for a more thorough understanding of the designs by the NRC and a more efficient review process. Therefore, the Commission has strongly endorsed regulatory actions that will encourage industry to pursue standardization. The NRC will continue to review evolutionary and advanced reactor designs, to resolve safety issues (including generic safety issues identified on currently operating reactors), and to develop and implement applicable rules, policies and guidance for the certification of standard designs.

The NRC completed its reviews in support of the final design approvals (FDAs) for two evolutionary light-water reactor designs — the General Electric (GE) Advanced Boiling-Water Reactor (ABWR) and the ASEA Brown Boveri/Combustion Engineering (ABB/CE) CESSAR System 80+ — and issued final design approval for these two designs in July 1994. The NRC will participate in the rulemaking hearings required for design certifications and expects to issue design certifications for both evolutionary designs in FY 1996.

Through FY 1997, the NRC will continue its review of two applications for midsize reactor designs that use passive safety features and systems. These reviews involve a number of first-of-a-kind technical issues that are unique to the design of passive plants. A detailed technical review is under way for the Westinghouse advanced passive pressurized-water reactor design (AP600). The NRC expects to complete its review of the AP600 and issue final design approval (FDA) by FY 1997. Rulemaking hearings associated with design certification will follow issuance of the FDA. The NRC will also continue its review of the second passive design — the GE Simplified Boiling-Water Reactor (SBWR). At the present time, GE is proposing to refocus its SBWR design review on resolving testing-related issues. This may extend the NRC review effort beyond FY 1997.

Through FY 1997, the NRC will pursue efforts associated with several non-light-water reactor designs. The technical staff has completed its acceptance review of the CANadian

Deuterium Uranium reactor design 3 (CANDU 3) application submitted by the Atomic Energy of Canada, Limited (AECL) and, in FY 1996, will begin the formal technical review leading to design certification. The NRC will also continue to keep abreast of activities relating to the future development of the Modular High-Temperature Gas-cooled Reactor (MHTGR).

Timely improvements in regulation are important for implementing the NRC policies related to future licensing. NRC's standard review plan (SRP), originally written to assist the staff in performing safety reviews of applications for construction permits or operating licenses, has undergone substantial revision during the past few years. In FY 1995, the NRC plans to issue, for comment, the draft SRP that has been updated to reflect current regulatory requirements, licensing guidance, and national codes and standards, and that has been expanded to include the licensing of future reactors that reference certified standard designs. During FY 1996-1997, the NRC will continue to update the SRP to incorporate information from next-generation reactor reviews.

Through FY 1997, the NRC will continue to develop policy and guidance for reliability assurance programs for next-generation reactors. The policy will consider reliability goals for systems and equipment, including passive components, design measures, and testing and monitoring requirements. In addition, the NRC will work with the industry to develop and publish guidance for vendors and utilities.

As an integral part of the licensing effort for future reactors, the NRC will continue to develop a new construction inspection program for the new generation of reactors currently seeking design certification.

Standard Reactor Safety Assessment

This activity includes (1) research to develop independent assessment methods, analytical models, and verified data needed to support design certification safety reviews and related rulemakings for advanced reactors, and (2) efforts to establish regulations and regulatory guidance for the combined license process described in 10 CFR Part 52.

The NRC will identify concerns of potential safety significance for selected safety systems, review the applicant's experimental and analytical programs, and develop independent information for making timely regulatory judgments. Working closely with the applicant, the NRC will provide feedback regarding the development and execution of the applicant's programs and will avoid unwarranted duplication of safety research efforts. At the same time, the vendor-generated analytical and experimental information will be independently verified as necessary, especially in areas in which the applicant would be the sole source of information.

During FY 1996-1997, RES will continue to assist NRR in the review of the AP600 and SBWR designs to identify and resolve key safety issues. Analyses and experiments will be performed to characterize safety system response to transients and postulated accidents. Vendors' test programs for the AP600 and SBWR will be reviewed to determine whether identified safety concerns can be satisfactorily resolved through these programs. The Westinghouse-sponsored AP600 test program and the General Electric SBWR test program will be followed as testing proceeds. These efforts will be completed in time to support design certification under 10 CFR Part 52. Confirmatory work in this area will continue during FY 1996-1997 to complete validation of analytical techniques used in the certification review.

Independent confirmatory testing will be performed for both the AP600 and SBWR designs. During FY 1995-1996, the NRC will use the ROSA-V test facility to confirm the thermal hydraulic behavior of the AP600 design under credible transients and accidents. A reduced-pressure, reduced-height facility, designed in accordance with generalized scaling laws, will be constructed in mid FY 1995 for the SBWR at Purdue University. Initial test results from ROSA-V became available in late FY 1994. Those from the small SBWR loop are expected to become available by late FY 1995 in time to support design certification.

In the area of severe accident analysis, during FY 1996-1997, the NRC will assimilate results and insights from LWR severe accident research to assess the behavior of the AP600 and the SBWR plants under accident conditions. In particular, the NRC will assess the applicability of the accident phenomena modeled in existing severe accident codes to these new designs (viz., passive, gravity-driven safety systems). Modifications will be made as needed. Research information needed to support design certification, in accordance with established schedules, will be provided during FY 1995-1996. Limited confirmatory research will continue in this area in FY 1997 if required.

The results of research in the standard reactor safety assessment activity will be used to assess the adequacy of new advanced reactor design concepts and investigate the margins of safety in structural, electrical, and mechanical components which are needed to support design certification and licensing decisions. New design concepts and engineering issues that will be evaluated include passive safety system performance; structural integrity of modular construction; the use of advanced instrumentation and control systems (I&C) including their qualification in seismic, accident, and electromagnetic/radio frequency environments; containment structural performance under postulated severe accident conditions;

acceptance criteria for new valve designs or improved requirements for existing valve designs; and acceptance of design codes and standards.

In FY 1995, the NRC will formulate qualification methods for advanced I&C systems considering both environmental and seismic qualification, and in FY 1996, will develop associated regulatory guides. In FY 1996, the NRC will develop the bases to establish staffing levels for advanced control rooms.

In FY 1996, the NRC will continue to develop technical bases for staff acceptance of design specifications for proposed motor-operated depressurization valves, check valves, and solenoid-operated valves. The NRC will also establish improved standards for postulating pipe ruptures and seismic design of piping. Rather than merely using stress and fatigue, the NRC will integrate actual failure mechanisms such as water hammer, corrosion, and erosion in the standard.

During FY 1995-1996, the NRC will continue to assess the need for risk analyses for the AP600 and SBWR systems and to extend these risk analyses wherever indicated to containment performance and failure consequences. The NRC will perform such analyses, as appropriate, to complete work on a schedule consistent with design certification schedules.

During FY 1995-1997, RES will continue to support NRR's preparation for the design certification application for CANDU 3 by maintaining technical progress on key issues and computer code development and benchmarking. RES will also develop program plans for work needed to support the actual design certification application. RES will support NRR, as requested, on PRA-related issues identified in the CANDU 3 design certification process.

Active, independent research to support issuance of the safety evaluation report on the preapplication reviews for MHTGR and PRISM reactors has been essentially completed. RES will continue to monitor applicant research programs as long as they are being funded in order to keep technically abreast of ongoing applicant research results.

During FY 1996, after issuance of Final Safety Evaluation Reports for the General Electric Advanced Boiling Water Reactor and the Combustion Engineering System 80+, and after revising Part 100 (discussed below), the NRC will evaluate the need for final revisions to 10 CFR Part 50, "Acceptability of Plant Performance for Severe Accidents," and associated regulatory guides implementing revised source term and criteria for engineered safety system performance. This effort is Phase 2 of the effort to decouple reactor siting from design. Phase 1 (which will be completed in FY 1995) revises the site criteria in Part 100 and places the current Part 100 dose criteria in an interim revision of Part 50. During FY 1996-1997, the NRC will continue to update regulations to reflect the results of new LWR source term research, as necessary.

During FY 1996-1997, the NRC will continue to work with national standards-setting organizations to ensure that the existing engineering and material standards are applicable for the advanced reactor designs. New standards will be developed if needed.

Legal Advice

The Office of the General Counsel (OGC) will address legal questions related to design certification and will represent the staff in any related administrative proceedings or judicial challenges.

Independent Review

During FY 1996-1997, the Atomic Safety and Licensing Board Panel (ASLBP) will continue to provide advice on adjudicatory and dispute resolution matters related to new standard reactor designs and will preside over standard reactor design hearings.

The Advisory Committee on Reactor Safeguards (ACRS) will review technical and policy issues related to the licensing of evolutionary and passive standard plant designs. This activity includes issues identified by the NRC staff and issues identified independently by the ACRS. The ACRS will review issues associated with design certification rulemaking for the ABWR and CESSAR System 80+ designs, the design certification of the AP600, initiatives to establish design standards for passive designs (eg., SBWR, AP600), and test programs to support certification of the AP600 and SBWR designs. The ACRS will also review policy and implementation issues associated with the use of design acceptance criteria; inspections, tests, analyses, and acceptance criteria for new standard plant designs; regulatory guides needed to implement 10 CFR Part 52 regulations; severe accident rulemaking for standard plant designs; analyses and methodology used to support licensing positions for standard plant design applications (e.g., thermal-hydraulic code analyses); proposed resolution of safety-related issues for passive reactor designs and security; and protection requirements against sabotage for future plant designs.

REACTOR PROGRAM: Standard Reactor Designs

General Support

This activity encompasses efforts to supervise and coordinate the policy development and operational activities of the Standard Reactor Designs Cost Center. It also includes information technology efforts of NRR to develop the prototype for the Construction Inspection Program database management system that will enable the NRC to ensure adequate coverage of construction activities for both evolutionary and passive reactor designs.

REACTOR PROGRAM

Test and Research Reactors Cost Center

			FY 1996 Estimate		FY 1997 Estimate	
	FY 1994 Enacted	FY 1995 Enacted	Request	Change from FY 1995	Planning Estimate	Change from FY 1996
Budget Authority by Function ($K)						
Salaries and Benefits	1,145	1,223	1,261	38	1,236	-25
Contract Support	735	693	713	20	694	-19
Travel	89	102	104	2	102	-2
Total	1,969	2,018	2,078	60	2,032	-46
Full-Time Equivalent Employment	14	15	15	0	15	0

The Test and Research Reactors Cost Center is conducted to ensure the safe operation of test and research reactors not used to generate power on a commercial basis and referred to as nonpower reactors. These smaller reactors are designed and used for research and testing in areas such as physics, chemistry, biology, medicine, and materials sciences; and for training of individuals for nuclear-related careers in the power industry, national defense, research, and education. NRC's Office of Nuclear Reactor Regulation conducts all agency activities associated with the licensing, inspection, oversight, and decommissioning of these reactors, and with the examination and requalification of nonpower reactor operators.

The NRC reviews new and renewal license applications and license amendments for nonpower reactors to evaluate the safety, environmental, and safeguards aspects of their operation. From past experience, the NRC expects to receive as many as 2 applications for license renewal and approximately 30 other license amendments each year. The NRC also conducts inspections at approximately 40 nonpower reactors each year to ensure their safe operation.

In addition to licensing and inspecting the nonpower facilities, the NRC must also license all personnel authorized to operate the nonpower reactors. The NRC administers initial examinations for new reactor operators and either inspects licensee requalification programs or conducts individual requalification examinations "for cause" to ensure that the approximately 300 nonpower reactor operators are qualified to perform their duties.

REACTOR PROGRAM: Test and Research Reactors

Through FY 1997, the NRC will continue to implement its regulation (10 CFR 50.64) requiring domestic nonpower reactors to convert from highly enriched uranium to low-enriched uranium. Of the remaining 13 reactors affected, it is expected that approximately 8 will convert over the next 3 to 5 years.

NUCLEAR MATERIALS AND NUCLEAR WASTE PROGRAM

NUCLEAR MATERIALS AND NUCLEAR WASTE PROGRAM

(Dollar amounts in tables represent thousands of dollars ($K). In text, whole dollar amounts are used. Staff numbers represent full-time equivalents (FTEs).)

Total FY 1996 Estimate $90,850,000

			FY 1996 Estimate		FY 1997 Estimate	
	FY 1994 Enacted	FY 1995 Enacted	Request	Change from FY 1995	Planning Estimate	Change from FY 1996
Budget Authority by Function ($K)						
Salaries and Benefits	48,819	48,857	50,126	1,269	49,003	-1,123
Contract Support	36,882	36,497	37,953	1,456	37,579	-374
Travel	2,925	2,798	2,771	-27	2,700	-71
Total	88,626	88,152	90,850	2,698	89,282	-1,568
Budget Authority by Cost Center ($K)						
Fuel Facilities	13,235	11,748	11,506	-242	11,674	168
Materials Users	26,424	27,551	28,372	821	27,545	-827
Low-Level Waste and Decommissioning	19,986	19,527	21,535	2,008	20,678	-857
Other Nuclear Materials and Waste Activities	6,981	7,326	7,437	111	7,385	-52
High-Level Waste	22,000	22,000	22,000	0	22,000	0
Total	88,626	88,152	90,850	2,698	89,282	-1,568
Full-Time Equivalent Employment by Cost Center						
Fuel Facilities	108	109	106	-3	105	-1
Materials Users	241	238	241	3	236	-5
Low-Level Waste and Decommissioning	109	116	115	-1	116	1
Other Nuclear Materials and Waste Activities	68	69	68	-1	69	1
High-Level Waste	70	59	60	1	60	0
Total	596	591	590	-1	586	-4

NUCLEAR MATERIALS AND NUCLEAR WASTE PROGRAM

Changes in Budget Authority ($K)

	FY 1996 Change from FY 1995			FY 1997 Change from FY 1996
Cost Center	Current Services	Program Requirements	Total	Total
Fuel Facilities	346	-588	-242	168
Materials Users	836	-15	821	-827
Low-Level Waste and Decommissioning	615	1,393	2,008	-857
Other Nuclear Materials and Waste Activities	191	-80	111	-52
High-Level Waste	523	-523	0	0
Total	2,511	187	2,698	-1,568

EXPLANATION OF RESOURCE CHANGES FOR CURRENT SERVICES

The changes for current services reflect (1) increases in personnel compensation of 2.0 percent general raise plus 1.21 percent locality raise expected in calendar year (CY) 1995, 2.4 percent expected in CY 1996, within-grade increases, and several minor adjustments, such as the varying number of pay days, the increased number of staff in the Federal Employees Retirement System, and the increased cost of benefits; and (2) increases for contract support and travel for inflation estimated at 3.0 percent in FY 1996.

EXPLANATION OF RESOURCE CHANGES FOR PROGRAM REQUIREMENTS

Fuel Facilities

The resource decrease in FY 1996 is due primarily to the completion of the licensing review and hearings for the Louisiana Energy Services' Claiborne Enrichment Center and the completion of the first annual certification for the United States Enrichment Corporation's two gaseous diffusion enrichment facilities.

NUCLEAR MATERIALS AND NUCLEAR WASTE PROGRAM

Materials Users

The resource decrease in FY 1996 is due to the completion of the National Academy of Sciences' study of the medical use regulatory program and the completion of the analysis for streamlining the materials licensing and inspection work process. This decrease has been partially offset by an increase in prelicensing activities and the initial review of an application to license a privately owned independent spent fuel storage installation, and to upgrade non-medical licensing guides.

Low-Level Waste and Decommissioning

The resource increase in FY 1996 is to conduct radiological assessments of formerly licensed sites to determine whether these sites are adequately decontaminated; to continue the review of license files terminated before 1965; to conduct confirmatory radiological surveys required to remediate or decommission reactors, fuel and materials facilities, and contaminated sites listed in the Site Decommissioning Management Plan (SDMP); and to prepare environmental impact statements for selected uranium recovery, fuel facility and materials facility, and contaminated sites. This increase has been partially offset by (1) decreases caused by changing the focus of performance assessment activities from the development of capabilities to the maintenance of performance assessment at a level that enables the NRC to respond to the submittal of a Low-Level Waste facility application from a non-Agreement State and (2) a decrease in the review of reclamation plans for uranium recovery Title I and Title II sites.

Other Nuclear Materials and Waste Activities

The resources for this cost center remain essentially level.

High-Level Waste

The resources decrease in FY 1996 to reflect time-phased program resource requirements.

NUCLEAR MATERIALS AND NUCLEAR WASTE PROGRAM

DESCRIPTION OF PROGRAM

The nuclear materials and nuclear waste program encompasses all NRC public health and safety, safeguards, research activities, operational data analysis, technical training, adjudicatory reviews, investigations, enforcement, and independent safety and legal advice related to the licensing, inspection, and environmental reviews for fuel cycle facilities; the transportation of nuclear materials; the safe interim storage of spent fuel; nuclear materials users; the safe management and disposal of low-level and high-level radioactive wastes; and uranium recovery and related remedial actions. This program also includes safeguards reviews for all licensing activities involving the export of special nuclear material, the integrated agency effort to oversee decontamination and decommissioning of facilities and sites associated with NRC-licensed activities, and the use of the Licensing Support System (LSS) for the submittal and management of documents in the high-level waste repository licensing proceeding.

This program comprises five cost centers: Fuel Facilities; Materials Users; Low-Level Waste and Decommissioning; Other Nuclear Materials and Waste Activities; and High-Level Waste.

The funds and staff for each of the five cost centers are described on pages 102 through 137. The contract support funds are allocated for work done by Department of Energy (DOE) contractors and commercial contractors for the NRC. The material that follows describes these cost centers and addresses the reasons why the resources are needed.

NUCLEAR MATERIALS AND NUCLEAR WASTE PROGRAM

Fuel Facilities Cost Center

			FY 1996 Estimate		FY 1997 Estimate	
	FY 1994 Enacted	FY 1995 Enacted	Request	Change from FY 1995	Planning Estimate	Change from FY 1996
Budget Authority by Function ($K)						
Salaries and Benefits	8,835	8,850	8,866	16	8,614	-252
Contract Support	3,904	2,420	2,127	-293	2,561	434
Travel	496	478	513	35	499	-14
Total	13,235	11,748	11,506	-242	11,674	168
Budget Authority by Activity ($K)						
Fuel Fabricators Oversight and Inspections	8,462	7,558	7,650	92	7,980	330
Uranium Enrichment Oversight and Inspections	3,115	2,749	2,344	-405	2,211	-133
General Support	1,658	1,441	1,512	71	1,483	-29
Total	13,235	11,748	11,506	-242	11,674	168
Full-Time Equivalent Employment by Activity						
Fuel Fabricators Oversight and Inspections	68	68	68	0	68	0
Uranium Enrichment Oversight and Inspections	21	24	21	-3	20	-1
General Support	19	17	17	0	17	0
Total	108	109	106	-3	105	-1

This cost center ensures that licensees adequately protect the public health and safety, common defense and security, worker safety, and the environment when radioactive material is handled and used for the nuclear fuel cycle after milling. Efforts in this cost center comprise NRC licensing, inspection, and regulatory oversight and development for the conversion of uranium ore concentrates (yellowcake) into uranium hexafluoride before enrichment, enrichment, the development and fabrication of reactor fuel, and the safe storage of fresh reactor fuel at reactor sites until the reactor core is initially loaded with fuel. Within the framework of this cost center, the NRC staff performs regulatory oversight of the United States Enrichment Corporation's (USEC's) operation of the two gaseous diffusion enrichment plants (Paducah and Portsmouth), and USEC's security program to protect classified matter at these plants.

This cost center comprises three major activities: fuel fabricators oversight and inspections; uranium enrichment oversight and inspections; and general support.

Fuel Fabricators Oversight and Inspections

This activity comprises NRC licensing, inspection, and regulatory oversight of the fuel cycle after milling; it requires detailed health, safety, safeguards, and environmental reviews and inspections of licensee procedures and facilities to ensure safe operations.

The NRC will complete the review and evaluation of approximately 80 license applications (new, amendment, and renewal) for nuclear fuel cycle facilities during FY 1996-1997. The NRC will also complete approximately 35 evaluations of new and amended safeguards plans for these facilities. Routinely scheduled health, safety, and safeguards inspections of approximately 25 fuel cycle facilities or sites will be conducted during FY 1996-1997 to provide reasonable assurance that unsafe conditions, involving unnecessary and harmful radiation exposure to employees or the public, do not develop and that radioactive materials are properly controlled to prevent a nuclear criticality accident. The NRC directs its safeguards inspections by ensuring that licensees comply with NRC requirements pertaining to, for example, protected area access control; detection, annunciation, and communications systems; barriers; material control and accounting systems; process monitoring systems; contingency plans for responding to threatening situations; and trained armed response personnel.

During FY 1996-1997, the NRC will continue to upgrade the fuel cycle facility program with a major revision of 10 CFR Parts 40 and 70 and supporting regulatory guidance. It will also refine the inspection procedures for evaluating nuclear criticality and chemical safety and continue a training program for staff and licensees to strengthen the program. The final Part 70 rule together with the Standard Review Plan and the Standard Format and Content Guide will be published in FY 1996. Revision of 10 CFR Part 40, similar to Part 70, and the associated regulatory guides will be initiated in FY 1997.

NUCLEAR MATERIALS AND NUCLEAR WASTE PROGRAM: Fuel Facilities

Uranium Enrichment Oversight and Inspections

This activity comprises the certification and regulatory oversight of the two United States Enrichment Corporation (USEC) facilities, and the licensing and inspection activities for the construction and operation of the Louisiana Energy Services (LES) centrifuge uranium enrichment facility, and includes the administration of a classified enrichment technology security program to provide guidance on and ensure proper protection of classified material.

In FY 1995, USEC will submit the initial application for a certificate of compliance with the new NRC standards that were promulgated in September 1994. In FY 1996, the NRC will complete the first certification review for the plants and will issue the first annual report to Congress on whether these plants are operating in compliance with NRC's standards.

During FY 1996-1997, the NRC will ensure that USEC operation of the gaseous diffusion enrichment plants provides adequate protection of the public health and safety and the common defense and security. NRC resident inspectors will continually inspect these two plants and will focus on operational safety, followup of events, quality management and staff performance.

During FY 1996-1997, the NRC will review and issue license amendments and conduct inspections during the construction of the LES centrifuge enrichment facility to ensure that the plant is constructed in accordance with NRC requirements. The NRC will also provide security policy and classification guidance support for the protection of national security information and restricted data for licensing, certifying, or regulating uranium enrichment facilities such as LES and USEC.

General Support

This activity comprises NRC supervision and coordination of policy direction efforts and operational activities of the Fuel Facilities Cost Center.

NUCLEAR MATERIALS AND NUCLEAR WASTE PROGRAM

Materials Users Cost Center

			FY 1996 Estimate		FY 1997 Estimate	
	FY 1994 Enacted	FY 1995 Enacted	Request	Change from FY 1995	Planning Estimate	Change from FY 1996
Budget Authority by Function ($K)						
Salaries and Benefits	19,384	19,092	19,948	856	19,181	-767
Contract Support	5,807	7,264	7,334	70	7,308	-26
Travel	1,233	1,195	1,090	-105	1,056	-34
Total	26,424	27,551	28,372	821	27,545	-827
Budget Authority by Activity ($K)						
Transportation and Spent Fuel Storage Licensing and Inspection	3,629	3,944	4,417	473	4,325	-92
Licensing and Inspecting Nuclear Materials Users	14,020	14,090	13,856	-234	13,256	-600
Nuclear Materials Research and Regulation Development	5,065	5,809	6,051	242	6,073	22
General Support	3,710	3,708	4,048	340	3,891	-157
Total	26,424	27,551	28,372	821	27,545	-827
Full-Time Equivalent Employment by Activity						
Transportation and Spent Fuel Storage Licensing and Inspection	29	31	33	2	33	0
Licensing and Inspecting Nuclear Materials Users	148	142	141	-1	137	-4
Nuclear Materials Research and Regulation Development	21	22	23	1	23	0
General Support	43	43	44	1	43	-1
Total	241	238	241	3	236	-5

This cost center ensures that licensees adequately protect the public health and safety, worker safety, and the environment when radioactive material is transported and used in various situations under normal operations and abnormal events. Efforts in this cost center comprise NRC licensing, inspection, and regulatory oversight and development for the transportation of radioactive materials in packages that produce a high degree of safety and the use of radioactive material.

NUCLEAR MATERIALS AND NUCLEAR WASTE PROGRAM: Materials Users

This cost center comprises four major activities: transportation and spent fuel storage licensing and inspection; licensing and inspecting nuclear materials users; nuclear materials research and regulation development; and general support.

Transportation and Spent Fuel Storage Licensing and Inspection

This activity comprises NRC certification of transport container package designs; licensing, inspection, and regulatory oversight of the interim storage of spent fuel outside reactor sites; and the safe interim storage of spent fuel. This activity ensures that licensees transport nuclear materials in packages that will provide a high degree of safety, and that licensees provide safe interim storage of spent reactor fuel. The NRC transportation activities are closely coordinated with those of the Department of Transportation, and as appropriate, with DOE and the Federal Emergency Management Agency (FEMA). The spent fuel storage activities require detailed health, safety, and environmental reviews and inspections of licensee procedures and facilities to ensure safe operations.

The NRC will complete the review of approximately 85 container design applications (new, amendment, and renewal) each year during FY 1996-1997. These applications are submitted by commercial vendors for transport of large quantities of radioactive material. In addition, each year during FY 1996-1997, the NRC will inspect approximately 10 implementations of quality assurance programs by users, suppliers, and fabricators of NRC-certified transport packages and will inspect some dry storage and materials vendors.

The NRC will complete the review of approximately 15 transport safeguards plans for shipments of special nuclear material each year during FY 1996-1997. The NRC will also survey routes proposed for shipments of nuclear material and relay to the Department of Transportation notifications received from licensees and carriers of planned import, export, or domestic shipments of nuclear material.

The DOE system for inventory and forecast of spent fuel and high-level radioactive waste generation will be monitored closely to enable timely and adequate waste management and early warning of capacity problems. The NRC will continue to maintain awareness of any potential delays in the DOE waste disposal program. During FY 1996-1997, the NRC will inspect spent-fuel storage facilities and onsite inspections of concrete vaults and casks at reactors. The NRC will also review 10 applications for new licenses, topical reports, and license amendments for site-specific interim storage of spent fuel at reactors.

During FY 1995-1996, the NRC will conduct prelicensing activities with industry in preparation for receipt of an application for a privately owned independent spent-fuel storage installation. The NRC will initiate review of the application during FY 1996-1997.

Licensing and Inspecting Nuclear Materials Users

This activity comprises NRC licensing and inspection of approximately 7000 medical, academic, industrial, and commercial users of nuclear and other radioactive material. These uses include medical diagnosis and therapy, medical and biological research, academic training and research, industrial gauging and nondestructive testing, production of radiopharmaceuticals, and fabrication of such commercial products as smoke detectors and other sealed sources and devices. Detailed health and safety reviews and inspections of licensee procedures and facilities provide reasonable assurance of safe operations and the development of safe products.

The NRC will complete the review of applications for new licenses, license amendments, license renewals, and sealed source and device designs for the use of radioactive material in FY 1996 for approximately 4500 applications, which will decline to approximately 4100 during FY 1997. The NRC will also conduct preapproval tests of new sealed sources and devices and technologies and test any products in which generic problems may occur.

During FY 1996-1997, the NRC will update and implement the medical management plan to provide programmatic improvements in the medical area for licensing, inspection guidance, and rulemaking, and conduct other analyses and evaluations as needed. The NRC will also prepare a major modification to the format of 10 CFR Part 35 and associated licensing and inspection guidance (including Regulatory Guide 10.8) to more easily accommodate changes in current technology and patterns of medical use. This revision of 10 CFR Part 35 will include evaluating the need to revise the existing training and experience criteria and the preceptor process. In FY 1996, the National Academy of Sciences (NAS) will complete its independent indepth review of regulatory rules, policies, practices, and procedures to assess whether NRC's current framework for medical use of byproduct material is appropriate to fulfill statutory responsibilities to protect the public health and safety. During FY 1996-1997, the NRC will review NAS recommendations and take appropriate action.

The NRC will conduct approximately 2300 routine health and safety inspections and closeout inspections of materials licensees during FY 1996 and approximately 2200 during FY 1997. These inspections are designed to ensure that licensees are conducting operations in a safe manner and in accordance with procedures and regulations. If conditions are noted that could cause unnecessary exposures or releases, prompt and appropriate enforcement actions are taken.

During FY 1995, the NRC will continue to implement and assess the pilot program of the Integrated Materials Performance Evaluation Program that will guide a new common process to assess the performance of NRC's regional materials program and that of the 29 Agreement States, and make appropriate recommendations. During FY 1996-1997, implementation will follow in the remaining Agreement State reviews after the NRC evaluates the initial regional and Agreement State reviews and makes any necessary changes to the process.

During FY 1996, the NRC will complete the analysis for streamlining the materials licensing and inspection work process. The objective of this analysis is to use work process engineering to establish more efficient and potentially automated processing of material license and amendment requests and use similar methods to improve on the materials inspection process. During FY 1997, the NRC will initiate implementation of the results of the streamlining analysis.

During FY 1996-1997, the NRC will upgrade the non-medical licensing guides. The guides will be upgraded so licensees can use them to prepare applications and to keep their program current.

During FY 1996-1997, the NRC will complete the review and evaluation of international safeguards and physical security aspects of approximately 110-125 license applications each year for the export of nuclear material from the United States and 50 Executive Branch consultation cases.

Nuclear Materials Research and Regulation Development

This activity comprises NRC efforts associated with developing human performance criteria; developing regulations, policy statements, and regulatory guides needed for the safeguarding of facilities and special nuclear materials, for the transportation of radioactive materials, and for the medical, academic, and industrial use of radioactive materials; and developing the technical basis for radiation protection standards for minimizing the adverse consequences of exposure to ionizing radiation from licensed nuclear materials activities. Safeguards regulatory products ensure the physical security and accountability of strategic special nuclear material and the physical protection of licensed facilities. Medical, academic, and industrial regulatory products help to ensure the public safety in the use of radioisotopes in medical diagnosis and the therapy, medical and biological research, academic training and research, industrial gauging and nondestructive testing, radiopharmaceutical production, and fabrication of such consumer products as smoke detectors.

During 1996-1997, the NRC will continue to refine research needs based on the completion of research projects addressing human performance deficiencies in teletherapy and remote afterloading brachytherapy devices. The NRC will also continue research projects as needed to develop a technical basis for regulatory guidance in areas that have been shown to contribute to human error among materials licensees.

The development of materials rules and regulatory guidance is managed centrally in the Office of Nuclear Regulatory Research to ensure: (1) rules are developed in a timely manner, (2) regulatory impact analyses are developed in support of materials-related rulemaking and other generic requirements, and (3) the results of NRC and other research are incorporated in materials regulations, policy statements, and guides for use in the licensing process. Semiannually, the NRC will perform an integrated review of the priorities and schedules for all rulemaking actions, which include those related to material licensees and radiation protection and health effects, to ensure that the highest priority rulemaking efforts are conducted. As final rules are completed, uninitiated rulemaking actions having the highest priority will be selected for rulemaking actions. In addition, the NRC will continue involvement of Agreement States in the development of rulemakings and other regulatory efforts that affect facilities licensed under 10 CFR Parts 30, 40, 61, and 70 or their State equivalents by obtaining Agreement State input on rulemaking issues involving compatibility as soon as is practically achievable and throughout the process.

During FY 1995-1996, the NRC will conduct ten rulemaking actions applicable to materials licensees and issue proposed and/or final rules and the associated regulatory guides where applicable for the following: (1) emergency planning for independent spent fuel storage facilities and monitored retrievable storage facilities, 10 CFR Part 72; (2) use of radiopharmaceuticals for medical research, use of biologics containing byproduct materials, and compounding radiopharmaceuticals, 10 CFR Parts 30, 32, 35; (3) exemption and continued regulatory authority in Agreement States and in offshore waters under 274, 10 CFR Part 150; (4) clarification of reporting of defects and noncompliance for materials facilities, 10 CFR Part 21; (5) pregnancy/breast-feeding status of patients, 10 CFR Part 35; (6) notification of incidents, 10 CFR Part 72; (7) physical protection of spent fuel storage at sites other than power reactors, 10 CFR Part 73; (8) safety regulations for fuel cycle facilities, 10 CFR Part 70; (9) list of approved spent fuel storage casks: addition of NUHOMS cask, 10 CFR Part 72; and (10) list of approved spent fuel storage casks: revision of VSC-24 storage cask, 10 CFR Part 72.

During FY 1996-1997, the NRC will develop approximately nine regulatory impact analyses (RIAs) each year in support of materials-related rulemaking and other generic requirements.

This activity also includes research on materials radiation protection and health effects that is being conducted to ensure that workers and the general public are adequately protected from the adverse consequences of exposure to ionizing radiation from licensed materials activities. Efforts include developing nuclear materials radiation protection standards and guidelines for implementing the standards in the licensing process.

During FY 1995-1996, the NRC will conduct five materials radiation protection and health effects rulemaking actions and issue proposed and/or final rules and the associated regulatory guides where applicable for the following: (1) termination or transfer of licensed activities, recordkeeping requirements, 10 CFR Parts 20, 30, 40, 61, 70, 72; (2) restrict accessible air gap between the radioactive source and the detector for generally licensed devices, 10 CFR Parts 31, 32; (3) radiography and radiation safety requirements for radiography operations, 10 CFR Part 34; (4) dose limits for patients and members of the public, 10 CFR Parts 20, 35; and (5) administration of radiopharmaceuticals to the wrong patient, 10 CFR Part 35.

During FY 1995-1996, the NRC will develop and implement testing and accreditation criteria for extremity dosimetry and develop performance criteria, standards, and guidance on in vivo and in vitro bioassay assessment. The NRC will also monitor ongoing health effects research and operating experience and develop appropriate materials-related regulations or regulatory guidance to address needs identified on the basis of this information. Also, NRC radiation protection and health effects research described in the reactor program (such as reduction in occupational worker dose limits) will be equally applicable to nuclear materials licensees.

General Support

This activity comprises NRC supervision and coordination of policy direction efforts, and operational activities of the Materials Users Cost Center.

NUCLEAR MATERIALS AND NUCLEAR WASTE PROGRAM

Low-Level Waste and Decommissioning Cost Center

			FY 1996 Estimate		FY 1997 Estimate	
	FY 1994 Enacted	FY 1995 Enacted	Request	Change from FY 1995	Planning Estimate	Change from FY 1996
Budget Authority by Function ($K)						
Salaries and Benefits	9,074	9,609	9,805	196	9,694	-111
Contract Support	10,255	9,387	11,170	1,783	10,437	-733
Travel	657	531	560	29	547	-13
Total	19,986	19,527	21,535	2,008	20,678	-857
Budget Authority by Activity ($K)						
Low-Level Waste Oversight and Inspections	6,653	5,953	5,674	-279	5,184	-490
Decommissioning	9,558	9,414	11,857	2,443	11,833	-24
Uranium Recovery	1,738	2,331	2,102	-229	1,796	-306
General Support	2,037	1,829	1,902	73	1,865	-37
Total	19,986	19,527	21,535	2,008	20,678	-857
Full-Time Equivalent Employment by Activity						
Low-Level Waste Oversight and Inspections	21	17	18	1	16	-2
Decommissioning	48	56	56	0	62	6
Uranium Recovery	16	21	19	-2	16	-3
General Support	24	22	22	0	22	0
Total	109	116	115	-1	116	1

This cost center ensures the effective and efficient discharge of NRC responsibilities to regulate low-level waste (LLW) in order to adequately protect the public health and safety and ensures an integrated agency program to oversee decontamination and decommissioning of facilities and sites associated with NRC licensed activities. Functions in this cost center are mandated by the Low-Level Radioactive Waste Policy Act (LLRWPA) of 1980, the Low-Level Radioactive Waste Policy Amendments Act (LLRWPAA) of 1985, the Uranium Mill Tailings Radiation Control Act (UMTRCA) of 1978, and portions of the West Valley Demonstration Project Act of 1980.

The LLRWPA makes each State responsible for providing for the disposal of LLW generated within its borders. This is expected to result in approximately 12 new LLW disposal facilities as States develop facilities and form compacts to dispose of waste. The LLRWPAA gives the NRC responsibility for defining LLW, licensing the Federal disposal of commercial LLW that is greater than Class C (Class C waste is defined in 10 CFR Part 61), granting individual generators of waste emergency access to non-Federal disposal facilities, providing regulatory guidance on alternatives to conventional shallow land burial, and ensuring that its reviews of LLW disposal facility applications are completed to the extent practicable within 15 months after formal receipt, excluding the hearing process.

The UMTRCA directs the NRC to develop regulations and to license the disposal of mill tailings from licensed uranium mills. Congress also directed the NRC to amend its regulations to conform to the Environmental Protection Agency (EPA) standards for these wastes. The UMTRCA directs the NRC to approve licensee plans for disposing of mill tailings, to review and concur in the site-by-site implementation of the Department of Energy (DOE) program for remedial actions concerning mill tailings, and to license DOE possession and long-term care of these sites.

This cost center comprises four major activities: low-level waste oversight and inspections; decommissioning; uranium recovery; and general support.

Low-Level Waste Oversight and Inspections

This activity comprises NRC licensing, inspection, and regulatory development efforts for those facilities under its jurisdiction that are engaged in near-surface land disposal. Regulatory responsibilities are implemented through detailed health, safety, and environmental reviews and inspections of licensee procedures and facilities to ensure safe operations. Resolution of low-level waste (LLW) disposal issues on waste form stability, waste package integrity, radionuclide transport through the disposal facility environment, and long-term doses resulting from radionuclide releases beyond the disposal facility environment are needed to ensure the long-term protection of the public health and safety and the environment. In addition, this activity includes LLW disposal research to (1) support the development of regulatory criteria for use in the licensing process, (2) provide the technical base for review of license applications for LLW disposal facilities, (3) provide the technical base for review of topical reports on waste form stability, and (4) assess licensee compliance with regulatory requirements, particularly those on radiation dose limits.

During FY 1996-1997, the NRC will maintain the existing LLW performance assessment modeling capability for timely completion of reviews as mandated by the LLRWPAA by developing, conducting, and evaluating performance assessments in order to prepare to respond to the submittal of a LLW facility application from a non-Agreement State.

During FY 1996-1997, the NRC will conduct and improve the inspection program at waste generator facilities and at operating and developing LLW disposal facilities. This program will address construction and operation of disposal facilities and radiation protection and environmental surveillance. Under this program, inspection procedures applied in assessing generator compliance with 10 CFR Part 61 waste form requirements will be updated.

During FY 1996-1997, the NRC will conduct research studies on the radionuclide retardation capabilities of concrete and backfill materials. The NRC will also continue to confirm the technical bases on LLW form characteristics (including chemical and radiological composition of waste streams) and stability.

During FY 1996-1997, the NRC will conduct research to identify and quantify the long-lived and hard-to-measure radionuclides found in LLW, to characterize activated metals, and to assess the chemical content of LLW, and will factor the results into performance assessment models. During FY 1996-1997, the NRC will research the behavior and composition of radionuclides and chelating agents in nuclear power plant decontamination concentrates and the role played by chelating agents to enhance mobility of radionuclides released from such waste. In FY 1997, the work will be complete and the final report will be issued.

During FY 1996-1997, the NRC will conduct field lysimeter studies to evaluate radionuclide releases from solidified LLW buried in soils at two sites in the Eastern United States. The NRC will conduct field lysimeter studies on Class A waste, ion-exchange resins, decontamination LLW, and activated metals, with emphasis on unsolidified LLW forms.

During FY 1996-1997, the NRC will investigate carbon-14 transfer and uptake coefficients in plants for the soil-to-root and air-to-leaves pathways for evaluating radionuclide exposures at LLW disposal sites. This is needed to revise the carbon-14 transfer coefficients in Regulatory Guide 1.109, "Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I," which are conservative estimates. In FY 1996, the NRC will verify this information at actual LLW sites and will factor the results into performance assessment models on population doses.

NUCLEAR MATERIALS AND NUCLEAR WASTE PROGRAM
Low-Level Waste and Decommissioning

During FY 1996-1997, the NRC will conduct studies involving activated metals and waste streams to include leaching of radionuclides, determining scaling factors for hard-to-measure radionuclides, addressing long-lived radionuclides, and assessing measurement capabilities to determine radionuclides. During FY 1996-1997, the NRC will conduct a mechanistic assessment of soil geochemistry in controlling radionuclide transport. Particular attention will be given to surface effects on silicate minerals. To complement the work on soil geochemistry, during FY 1996-1997, the NRC will continue and complete an assessment of the role played by organic complexants and microparticulates in enhancing radionuclide movement. The results of this research will permit more realistic performance assessments of LLW disposal.

In FY 1995-1997 the NRC will conduct large-scale field experiments to assess flow and transport in heterogeneous media on a scale relevant to LLW and decommissioning sites. This builds on earlier work at Las Cruces, New Mexico, to assess the present capability of modeling groundwater flow and radionuclide transport in the unsaturated zone at LLW disposal sites. This work will be used to evaluate monitoring strategies, methods, and instrumentation.

In FY 1995, the NRC will modify the Breach, Leach, and Transport model for generating inventory-based LLW source terms to (1) complete degradation models of alternate waste forms such as high-integrity containers and high-density polyethylene containers, with emphasis on the release of radionuclides from partially failed containers, and (2) incorporate a coupled hydrochemical transport model. During FY 1996-1997, the NRC will factor the results into performance assessment methodology.

In FY 1996, the NRC will complete the testing of a radionuclide retardation/transport model against experimental laboratory, lysimeter, and field data. The results will be factored into performance assessment models of radionuclide transport. During FY 1996-1997, the NRC will assess and test the next generation of groundwater models for LLW disposal sites and decommissioned facilities. Emphasis will be given to unsaturated zone flow and transport models. Testing will be performed at an appropriate field site and particular attention will be given to processes and conditions indicative of LLW sites and decommissioned facilities.

In FY 1995-1997, the NRC will emphasize the development and documentation of performance assessment methods. This will serve as a vehicle for integrating research on hydrology, waste form and waste package behavior, engineered facility performance, source term quantification, and radionuclide transport, as well as provide staff capability to conduct performance assessments.

NUCLEAR MATERIALS AND NUCLEAR WASTE PROGRAM
Low-Level Waste and Decommissioning

During FY 1995-1996, the NRC will conduct proposed and/or final rulemakings on LLW shipment manifest information and reporting, 10 CFR Parts 20, 61, and on requirements for government land ownership, 10 CFR Part 61.

The Advisory Committee on Nuclear Waste (ACNW) provides the Commission with independent technical review of and advice on the disposal of low-level nuclear waste and related matters. To perform objective reviews and provide advice, the ACNW relies on highly qualified members and specialized consultants. It is responsible for reviewing and providing advice on nuclear waste disposal facilities within the purview of NRC responsibilities, as directed by the Commission.

The work of the ACNW discussed in this program pertains only to low-level nuclear waste disposal facilities. Work in the area of high-level nuclear waste is discussed separately in the High-Level Waste Cost Center.

The ACNW activities in the area of low-level nuclear waste primarily focus on disposal facility issues associated with the Nuclear Waste Policy Act, the Low-Level Radioactive Waste Policy Act, and the Uranium Mill Tailings Radiation Control Act. During FY 1996-1997, the ACNW will review the Office of Nuclear Regulatory Research programs supporting the Office of Nuclear Material Safety and Safeguards Waste Management Division, technical issues associated with the environmental transport of radioactive materials and the environmental monitoring of low-level radioactive waste disposal facilities, international programs and strategies for lessons applicable to domestic LLW disposal, proposed guidance with respect to engineered alternatives to shallow-land burial of LLW (e.g., above-ground vaults), progress in the development of NRC's LLW performance assessment capabilities and attendant guidance to assist licensees and Agreement States, and other studies and activities as directed by the Commission.

Decommissioning

This activity comprises NRC's integrated requirements for the decontamination and decommissioning of facilities and sites associated with NRC-licensed activities. Decommissioning involves safely removing a facility from service and reducing residual radioactivity to a level that permits the property to be released for unrestricted use. This action is to be taken by a licensee before termination of the license. This activity also includes decommissioning and environmental protection research being conducted to develop and coordinate radiation protection standards and guidelines for the decommissioning of facilities and sites associated with NRC-licensed activities. The research findings will be used to establish criteria for releasing areas containing radioactive material and to evaluate potential pathways and doses and risks from public exposure to radioactive material.

During FY 1996-1997, the NRC will continue to manage a program for materials facility decommissioning to review submittals resulting from the Decommissioning Rule. It will also review approximately 50 financial assurance certifications and funding plans each year as a part of new, amendment, and renewal license requests.

In FY 1996, the NRC will complete the review of a reactor decommissioning plan for Big Rock Point. In addition, during FY 1996-1997, the NRC will initiate the review of one reactor decommissioning plan each year.

The NRC will conduct licensing reviews and inspections for shutdown power reactors having a license to possess nuclear material. During FY 1996-1997, the NRC will inspect eight reactor sites that have spent fuel in the reactor spent-fuel pool and are being decommissioned and dismantled or put into a safe storage (SAFSTOR) condition and will review emergency plan modifications and changes to the technical specifications to reflect the decommissioning mode for all power reactors that have approved decommissioning plans and possession-only licenses. The NRC will also conduct routine inspections at four power reactors in SAFSTOR that do not have spent fuel onsite.

During FY 1996-1997, the NRC will conduct actions necessary to compel timely cleanup of approximately 50 known materials and fuel facility sites listed in the site decommissioning management program (SDMP). This program includes: (1) review of site characterization plans; (2) review and approval of the decontamination and decommissioning plans; (3) technical assistance and review of the licensees' performance of decommissioning activities; (4) conduct of confirmatory surveys and termination of licenses; (5) review of earlier burials of radioactive material under 10 CFR 20.302 and 20.304; (6) development of policy and regulations to ensure efficient and consistent licensing actions to minimize future contaminated sites problems; and (7) implementation of an action plan to encourage and enforce timely cleanup of sites listed in the SDMP. In FY 1997, the NRC will complete a review of licenses terminated prior to 1965 to determine if further remediation is required to protect the public health and the environment. During FY 1996-1997, the NRC will also conduct performance assessments at two selected SDMP sites.

During FY 1996-1997, the NRC will continue to interact with the Environmental Protection Agency (EPA) to resolve issues of mutual concern that relate to the regulation of radionuclides to avoid unnecessary duplication of regulatory requirements, such as harmonization of risk goals, standards for disposal of LLW, rescission of Subpart I, and standards for recycling.

During FY 1995-1996, the NRC is planning to conduct four rulemaking actions applicable to decommissioning and environmental protection, and issue proposed and/or final rules and the associated regulatory guides where applicable for the following: (1) sewer disposal, 10 CFR Part 20; (2) distribution of source and byproduct material licensing and reporting requirements (Phase I), 10 CFR Part 40; (3) requirements for decommissioning cost estimate updates, 10 CFR Part 50; and (4) clarification of decommissioning funding requirements, 10 CFR Parts 30, 40, 50, 70, 72.

Semiannually, the NRC will perform an integrated review of the priorities and schedules for all rulemaking actions, which include those related to decommissioning and environmental protection to ensure that the highest priority rulemaking efforts are conducted. As final rules are completed, unintitiated rulemaking actions having the highest priority will be selected for rulemaking actions.

During FY 1995-1996, the NRC will conduct: (1) a systematic assessment of the existing exemptions allowing release of radioactive material from regulatory control, (2) research on potential doses from the recycling or reuse of contaminated materials and equipment, and (3) investigations on the appropriateness of criteria for releasing areas containing buried radioactive materials (regulatory guidance will be developed as necessary). The NRC will also publish three proposed and/or final regulatory guides for: (1) decommissioning recordkeeping for power reactor licensees, (2) standard format and content for submittal of reactor decommissioning plans, and (3) decommissioning recordkeeping for materials licensees.

During FY 1995-1996, the NRC will continue implementation efforts directed at decommissioning activities. During FY 1995-1997, the NRC will issue guidance that will define the doses that would result from surface and volumetric levels of radioactive contamination should facilities and lands be released for unrestricted public use. Calculational models to be incorporated into the dose modeling strategy will encompass a range of site and source inventory complexities for groundwater flow and transport, and air deposition and resuspension processes (including coupling and appropriate calculational codes for dose assessment). The NRC will also enhance and test the calculational models against specific site conditions and residual contamination inventories on a variety of site and inventory data sets through the facility scale, and assess associated uncertainties. During FY 1995-1996, the NRC will reexamine the validity of the criteria and certification amounts based on actual decommissioning costs for nonpower reactor facilities.

During FY 1995-1996, the NRC will closely coordinate regulatory research with other Federal organizations. For example, the NRC will participate in EPA's interagency task group to prepare Federal guidance on exposure of the public to radiation. One action assigned to this task group is the development of Federal guidance on radiological criteria for decommissioning.

Uranium Recovery

This activity comprises NRC licensing and inspection of uranium mills, heap-leaching facilities, ore-buying stations, commercial solution mining, uranium extraction research and development projects, and commercial disposal of radioactive tailings or waste as defined in Section 11e(2) of the Atomic Energy Act of 1954, as amended. This activity requires detailed health, safety, and environmental reviews and inspections of licensee procedures and facilities to provide reasonable assurance of safe operations; the development of NRC regulatory guidance to implement the EPA standards for regulating mill tailings; and the site-by-site approval of licensee plans for disposing of mill tailings and other radioactive material.

During FY 1996-1997, the NRC will develop regulatory guidance to implement: (1) the Energy Policy Act of 1992, Title X payments and license termination procedures, and (2) the requirements of Section 274C(4) of the Atomic Energy Act, as amended, to review Agreement State license activities to ensure that all applicable standards and requirements have been met before license termination.

The NRC will complete the review of five licensee reclamation plans in FY 1996 and two in FY 1997, including preparation of environmental impact statements for selected uranium recovery sites.

The NRC will complete the review of approximately 60 new, amendment, and renewal license applications for uranium recovery facilities each year during FY 1996-1997. The NRC will review approximately 70 licensee monitoring reports to assess licensee performance. The NRC will also conduct approximately 35 radiological safety inspections and inspections of uranium reclamation activities during FY 1996-1997. During these inspections, the NRC will thoroughly review each licensee's program and implementation of licensee conditions to protect the public health and safety and the environment.

This activity also includes NRC's efforts related to the evaluation of the remedial actions to be taken by DOE at 24 mill tailings piles at 22 sites, as well as at several thousand contaminated properties located near the sites. The NRC reviews and concurs in remedial action plans and proposed designs for the site and properties in the vicinity of the site and concurs in DOE's plans for long-term control of radiation or radioactive and nonradioactive releases from the site and for the protection and cleanup of groundwater. Once the remedial action has been completed, the NRC is responsible for licensing DOE for long-term care and site maintenance.

The NRC has already concurred in remedial action plans for 15 of the 22 sites. During FY 1996-1997, the NRC will continue to review and concur in DOE's proposed remedial action plans and related documents. The NRC will also continue to concur in completed remedial actions and long-term surveillance plans for all the sites.

During FY 1996-1997, the NRC will implement a program for dam safety for all NRC licensees and coordinate activities with the Federal Emergency Management Agency. This program was developed to improve the effectiveness of NRC's implementation of the Federal Guidelines on Dam Safety.

General Support

This activity comprises NRC supervision and coordination of policy direction efforts, and operational activities of the Low-Level Waste and Decommissioning Cost Center.

NUCLEAR MATERIALS AND NUCLEAR WASTE PROGRAM

Other Nuclear Materials and Waste Activities Cost Center

			FY 1996 Estimate		FY 1997 Estimate	
	FY 1994 Enacted	FY 1995 Enacted	Request	Change from FY 1995	Planning Estimate	Change from FY 1996
Budget Authority by Function ($K)						
Salaries and Benefits	5,858	5,932	5,998	66	5,961	-37
Contract Support	860	1,049	1,095	46	1,082	-13
Travel	263	345	344	-1	342	-2
Total	6,981	7,326	7,437	111	7,385	-52
Budget Authority by Activity ($K)						
Independent Analysis of Operational Experience	1,336	1,142	1,171	29	1,148	-23
Technical Training and Qualification	532	867	908	41	901	-7
Adjudicatory Reviews	97	101	103	2	102	-1
Investigations, Enforcement, and Legal Advice	3,611	3,720	3,721	1	3,637	-84
Event Evaluation	1,405	1,496	1,534	38	1,597	63
Total	6,981	7,326	7,437	111	7,385	-52
Full-Time Equivalent Employment by Activity						
Independent Analysis of Operational Experience	9	9	9	0	9	0
Technical Training and Qualifications	2	2	2	0	2	0
Adjudicatory Reviews	1	1	1	0	1	0
Investigations, Enforcement and Legal Advice	39	39	38	-1	38	0
Event Evaluation	17	18	18	0	19	1
Total	68	69	68	-1	69	1

This cost center ensures identification, evaluation and response to potentially significant events and safety concerns, technical training, independent adjudicatory reviews, investigations of wrongdoing by licensees, enforcement policy, and resolution of legal issues associated with nuclear materials licensees.

This cost center comprises five major activities: independent analysis of operational experience; technical training and qualification; adjudicatory reviews; investigations, enforcement, and legal advice; and event evaluation.

Independent Analysis of Operational Experience

This activity is conducted by the Office for Analysis and Evaluation of Operational Data (AEOD) to identify, evaluate, and respond to potentially significant events and safety concerns involving nonreactor facilities, based on events reported to the NRC by its licensees and the Agreement States.

AEOD oversees the agency's incident and accident investigation programs to ensure that significant and extraordinary safety-significant operational events involving nuclear materials and fuel facilities licensed by the NRC are investigated in a systematic and technically sound manner and that information is obtained on the causes of the events, including those involving NRC activities, so that the NRC can take corrective actions that are timely and effective. For events that could be of major significance, an accident review group (ARG) or incident investigation team (IIT) is established that is independent of the region and the program office. For investigating less significant operational events, an Augmented Inspection Team is established, under regional direction complemented by headquarters personnel, as necessary. During FY 1996-1997, the NRC will support IITs as required; maintain the Incident Investigation Program Management Directive, associated manual, and IIT rosters, and incorporate the lessons learned from completed IITs; and conduct periodic training of IIT roster members and leaders. The NRC will also independently review the adequacy of the resolution of staff actions assigned by the Executive Director for Operations (EDO) for IITs and document the status until closeout of IIT-initiated staff actions. During FY 1996-1997, the NRC will implement and maintain the programmatic actions needed to ensure the capability to activate and support an ARG reporting to the Commission in response to an event of extraordinary safety significance at a licensed nuclear materials facility.

Incident response activities are conducted to ensure that the NRC is prepared to carry out its role in a radiological emergency at NRC-licensed nonreactor facilities, that licensee responses are consistent with their responsibilities, and that NRC responses are coordinated with other Federal response activities and State and local government activities. The NRC's responsibilities in this area are to (1) manage the NRC Operations Center; (2) ensure the NRC response program is in consonance with the overall Federal response system; (3) develop, maintain, and integrate agencywide response plans and procedures; (4) train agency personnel and organizations in the conduct of their incident response responsibilities; (5) conduct exercises to achieve and test readiness objectives; (6) provide operational support and contract management for agency response activities; (7) evaluate and assess headquarters and regional response capabilities; and (8) operate the NRC Operations Center 24 hours a day with qualified systems engineers capable of recognizing and communicating problems and emergencies to management.

During FY 1996-1997, the NRC will continue to (1) maintain, improve, and implement the NRC incident response program in response to actual operational events within the industry especially as they relate to gaseous diffusion plants; (2) operate the NRC Operations Center 24 hours a day with nuclear engineers capable of receiving event reports and recognizing and communicating problems and emergencies to management; (3) coordinate State and Federal response efforts to develop and improve the Federal Radiological Emergency Response Plan and the Federal Response Plan; and (4) maintain and improve the NRC Operations Center and regional functional procedures, response tools, and training. During FY 1996-1997, the NRC will assess regional incident response programs and emergency preparedness exercises with each region.

A standardized training program on the technical and organizational aspects of emergency response has been developed and continues to evolve. During FY 1996-1997, this training will continue to be conducted for headquarters and regional response personnel. Training will also be offered periodically to Federal agencies that support the NRC, as well as State agencies that the NRC supports during an accident. At least one exercise will be conducted annually to confirm and maintain the capabilities of NRC response personnel to meet the unique needs associated with materials licensees and fuel cycle facilities. More efficient notification and information exchange methods will continue to be developed among the Federal response agencies involved in this area.

This activity also includes the review and evaluation of operational experience from NRC licensees and Agreement States to identify generic issues resulting from significant events or situations that warrant detailed evaluation. These issues are further analyzed to assess the root causes of the identified deficiency and the adequacy of corrective actions implemented and planned, and to identify those safety concerns that may warrant regulatory attention. Operational events, such as overexposure to radioactive materials and medical misadministrations of nuclear material, are included in this review.

During FY 1996-1997, the NRC will continue to issue case studies, trends and patterns reports, engineering evaluations, and nuclear materials technical reviews. Results, findings, and recommendations for actions based on these studies will be widely disseminated to the nuclear industry and the public in a timely manner. During FY 1996-1997, the NRC will continue the review of operational events such as overexposure to radioactive materials and medical misadministrations of nuclear materials, and will complete the revision of abnormal occurrence (AO) criteria reporting requirements for medical misadministrations and revise AO criteria for overexposure events to make the dose criteria consistent with the new 10 CFR Part 20. The NRC will continue the collection, technical screening, and coding of approximately 2000 nuclear materials event and inspection reports into databases for annual agency access and will continue implementation of a database for nuclear materials events, including medical misadministrations and fuel cycle events. The NRC will also develop a client/server application to provide the capability for the database to be accessed throughout the NRC. As a result of the long-term follow-up specified by the GE-Wilmington Incident Investigation Team Report, the NRC will continue to evaluate operating experience from fuel cycle licensees.

Technical Training and Qualification

This activity provides technical training for NRC staff and Agreement State inspectors in support of the nuclear materials and nuclear waste program. Curriculum areas in support of the nuclear materials and nuclear waste program will be maintained in probabilistic risk assessment, radiation protection, fuel cycle technology, security and safeguards, and regulatory skills. New courses will be developed and existing courses will be modified to meet new or changing needs. Training is also provided to other Federal, State, and foreign regulatory counterpart employees on a space-available basis.

The technical training curriculum will continue to be provided to ensure appropriate coverage in specialized areas. In FY 1996-1997, the technical training curriculum supporting the nuclear materials and nuclear waste program will continue to include approximately 60 courses ranging in duration from 1 day to 5 weeks. Emphasis will continue to be placed on nuclear materials safety and fuel cycle program development and training.

Adjudicatory Reviews

The Atomic Safety and Licensing Board Panel is the statutory office of the NRC and consists of administrative judges who, sitting alone and in three-member boards, conduct adjudicatory hearings pursuant to the following statutes: the Administrative Procedure Act; the Atomic Energy Act of 1954, as amended; the National Environmental Policy Act of 1969, as amended; the Nuclear Waste Policy Act of 1982, as amended; and the Program Fraud Civil Remedies Act.

The boards hear and decide issues granting, suspending, revoking, or amending licenses to conduct licensed activities. Hearings address issues involving health, safety, anti-trust, and the environment, as well as enforcement and civil penalties. Individual administrative judges and administrative law judges are authorized to decide cases involving the licensing of nuclear materials and other cases, as directed by the Commission. During FY 1996-1997, the Atomic Safety and Licensing Board Panel will conduct adjudicatory hearings usually near where the dispute arose, pursuant to the pertinent acts to include issues of granting, suspending, revoking or amending licenses . The Panel also will maintain and train a legal and technical staff adequate to ensure the continuing availability of due process in antitrust, enforcement, licensing, decommissioning, and other disputes requiring independent resolution and will continue to provide advice on adjudicatory and dispute resolution matters related to low-level waste, decommissioning, and other proceedings and on other regulatory and administrative matters as required.

Investigations, Enforcement, and Legal Advice

The NRC Office of Investigations investigates allegations of wrongdoing by NRC materials licensees; the Office of Enforcement ensures compliance with regulations and license conditions, obtains prompt correction in areas of noncompliance, deters further noncompliance, and encourages improvement of materials licensee performance; and the Office of General Counsel addresses legal questions associated with the regulation of spent-fuel storage, low-level waste management, transportation of nuclear materials, and certification of the United States Enrichment Corporation's (USEC's) gaseous diffusion facilities. All findings and conclusions that result from investigations are sent to the appropriate program office and the Office of Enforcement for review of the issues involved and a determination as to whether enforcement action is warranted. The Director, Office of Investigations, refers suspected or alleged criminal violations concerning NRC licensees and others within NRC's regulatory jurisdiction to the Department of Justice. The NRC will continue to investigate allegations of wrongdoing by NRC materials licensees and others within its regulatory jurisdiction. The current workload consists of approximately 60 active materials cases. Approximately 70-90 materials cases are expected to be opened each year during FY 1996-1997. The NRC will refine, administer, and maintain quality control standards pertaining to the conduct of investigations. During FY 1996-1997, the staff will apprise the Commission and appropriate agency offices of matters under investigation that may affect the public health and safety or other aspects of the agency's mission. The staff will maintain liaison with other agencies and organizations to ensure the timely exchange of information of mutual interest and refer matters judged to be criminal to the Department of Justice.

The NRC will continue to implement an enforcement program with support from the regional offices. Activities include overseeing and evaluating regional enforcement efforts; coordinating and developing regional enforcement actions and recommendations; evaluating potential enforcement cases; reviewing inspection and investigation reports and confirmatory action letters; initiating and processing notices of violations, civil monetary penalties, and various enforcement orders; reviewing draft regulations, inspection guidance, and other initiatives for their effect on the enforcement process and providing advice and guidance on related enforcement issues; assisting the Office of Nuclear Material Safety and Safeguards on orders modifying licenses, including cleanup orders; and assisting the Office of the General Counsel in the administrative hearing process, including presenting testimony. As the number and types of enforcement actions taken in any period are a function of the number of licensees and the licensees' performance, it is difficult to predict future activity levels; however, previous enforcement activity has been as follows:

Fiscal Year	Materials Enforcement Actions Considered	Resulting Civil Penalties	Orders Issued
1992	122	57	17
1993	205	74	10
1994	151	51	30

On the basis of this previous enforcement activity, the NRC expects to consider between 130 and 170 materials enforcement actions each year during FY 1996-1997.

The Office of Enforcement will continue to develop and promulgate enforcement policy, including the maintenance of an enforcement manual. The basic manual was issued in May 1990 and was updated in September 1994. Additional sections and refinements based on experience will be issued in subsequent years. The staff will continue to review Commission directives for impact on the enforcement policy or program and make changes as necessary. The staff will complete its review of the enforcement program in FY 1995. During FY 1996-1997, the NRC will implement the recommendations as appropriate. During FY 1996-1997, the NRC will continue to monitor actions filed with the Department of Labor (DOL) under Section 211 of the Energy Reorganization Act, coordinate with DOL, and develop enforcement actions where there are properly supported findings of discrimination. Also during this period, the staff will maintain data generated in the enforcement process to monitor the enforcement program and to evaluate materials licensees in order to identify weak performers who require greater NRC oversight.

The Office of the General Counsel will address legal questions related to the regulation of spent-fuel storage, low-level waste management, transportation of nuclear materials, and will provide legal assistance to the staff as the staff issues procedures and develops a regulatory framework governing NRC regulation and certification of the United States Enrichment Corporation gaseous diffusion enrichment facilities.

The Office of the General Counsel will provide legal assistance to the NRC staff with respect to the review related to licensing, operation, enforcement and decommissioning of materials licensees and facilities; the promulgation and amendment of NRC regulations and guides pertinent to the aforementioned matters; representing the NRC staff in adjudications arising from proposed licensing and enforcement actions; representing the Commission in lawsuits arising from adjudicatory and rulemaking decisions related to materials licensees; and providing legal analyses of regulations, statutes, and cases relevant to NRC activities.

Event Evaluation

The Office of Nuclear Material Safety and Safeguards (NMSS) responds to incidents and events in the materials and transportation programs. During FY 1996-1997, NMSS will maintain the capability for incident response and safety-based reactive inspections pertaining to materials and transportation. NMSS will also provide the capability for allegations, investigations, enforcement actions, and operational data analysis.

NUCLEAR MATERIALS AND NUCLEAR WASTE PROGRAM

High-Level Waste Cost Center

	FY 1994 Enacted	FY 1995 Enacted	FY 1996 Estimate		FY 1997 Estimate	
			Request	Change from FY 1995	Planning Estimate	Change from FY 1996
Budget Authority by Function ($K)						
Salaries and Benefits	5,668	5,374	5,509	135	5,553	44
Contract Support	16,056	16,377	16,227	-150	16,191	-36
Travel	276	249	264	15	256	-8
Total	22,000	22,000	22,000	0	22,000	0
Budget Authority by Activity ($K)						
High-Level Waste Licensing	14,515	14,204	14,044	-160	14,222	178
High-Level Waste Research and Regulation Development	6,917	7,166	7,328	162	7,146	-182
Other High-Level Waste Activities	568	630	628	-2	632	4
Total	22,000	22,000	22,000	0	22,000	0
Full-Time Equivalent Employment by Activity						
High-Level Waste Licensing	58	48	48	0	48	0
High-Level Waste Research and Regulation Development	6	6	6	0	6	0
Other High-Level Waste Activities	6	5	6	1	6	0
Total	70	59	60	1	60	0

The regulatory activities in this cost center are mandated by the Nuclear Waste Policy Act (NWPA) of 1982, the Nuclear Waste Policy Amendments Act (NWPAA) of 1987, and the National Energy Policy Act of 1992. The NWPA specifies a detailed approach for the long-range undertaking of high-level waste (HLW) disposal, with DOE having operational responsibility and the NRC having regulatory responsibility. This undertaking involves a complex, integrated system of waste handling, transportation, interim and retrievable storage, and ultimate deep geologic disposal of HLW, requiring the protection of the public health and safety and the environment over thousands of years. The NWPAA directs DOE to characterize only one candidate site, the Yucca Mountain site in the State of Nevada, and to terminate site-specific activities at all other candidate sites. The National Energy Policy

Act directs the NRC to revise its regulations (10 CFR Part 60) within one year after the Environmental Protection Agency (EPA) issues new standards.

NRC's HLW repository program is proceeding according to the process established by the NWPA, as amended, and supports the current DOE schedule, which is reflected in DOE's "Project Decision Schedule," Revision 1, dated June 1991 as modified to reflect tunnel boring of the Exploratory Studies Facility (ESF) which commenced in September 1994. NRC staff is reviewing DOE's activities as it implements its New Program Approach which focuses on site suitability evaluations performed in a stepwise manner leading to a technical site suitability determination in 1998. The NRC is developing guidance and license review criteria according to DOE's program priorities to ensure that all required licensing support and guidance documents are available when needed and completed before DOE applies for a license in 2001.

The Center for Nuclear Waste Regulatory Analyses (CNWRA), a federally funded research and development center (FFRDC) under contract to the NRC, has been established to provide technical assistance and conduct research for NRC's HLW program. The CNWRA provides support, under NRC direction, for NRC activities related to the geologic repository and monitored retrievable storage facility, transportation, environment, and other activities associated with the storage and disposal of nuclear waste under the NWPA and NWPAA. The NRC will continue to sponsor the CNWRA during the planning period. This sponsorship will include providing for the administrative, management, and quality assurance procedures and practices necessary to operate the CNWRA.

The contract support funds are allocated for work done for the NRC by the CNWRA and some commercial contractors and universities.

This cost center comprises three major activities: high-level waste licensing, high-level waste research and regulation development, and other high-level waste activities. Together, these activities are designed to ensure that high-level nuclear waste is managed and disposed of safely.

High-Level Waste Licensing

This activity is conducted to ensure the effective, efficient, and timely discharge of NRC's licensing responsibilities under the NWPA and NWPAA.

NUCLEAR MATERIALS AND NUCLEAR WASTE PROGRAM: High-Level Waste

The high-level waste (HLW) licensing activity consists of work required to implement NRC's responsibility to license and inspect the national HLW repository. To fulfill this responsibility without causing undue delay or unnecessary rework in the DOE program, the NRC and DOE will continue to interact and conduct prelicensing consultation. This includes consultation on DOE's New Program Approach on a regular basis. To provide for an effective and efficient licensing process, the NRC will develop methods to permit the independent determination of the acceptability of DOE licensing information. The NRC provides guidance to help ensure that the DOE program develops essential and acceptable data, provides onsite overview of DOE activities, identifies and resolves issues, and reviews and evaluates DOE submittals.

During FY 1996-1997, the NRC will develop the rulemaking on elimination of inconsistencies between NRC regulations and EPA HLW standards. In FY 1996, the NRC will complete the final rule on dose criteria for design basis events. A rulemaking on implementation of the EPA HLW standards will be initiated in FY 1997. During this period, the NRC will continue to review and comment on any amendments to DOE's Mission Plan, revisions to its Project Decision Schedule, or other program planning documentation to help ensure that NWPA and NWPAA statutory actions are completed and the schedules are met. In addition, as required under the NWPAA, the NRC will provide limited support to the Nuclear Waste Technical Review Board.

During FY 1996-1997, with support from the CNWRA, the staff will continue to develop the license application review plan (LARP) for a geologic repository using the systematic regulatory analysis (SRA) process. During FY 1995-1997, between 8-14 compliance determination methods (CDMs) (review methods and acceptance criteria) will be completed each year.

During FY 1996-1997, the NRC will continue to develop and revise repository subsystem models such as: (1) models for thermohydraulics, radiolysis, and galvanic corrosion within the engineered barrier system; (2) modeling of fault displacement, volcanism, and seismic hazards; (3) thermal/thermal-mechanical modeling; and (4) modeling of other topics as needed for developing CDMs. The staff will use these models and codes to evaluate ongoing DOE site characterization activities, to develop the repository License Application Review Plan and support rulemakings, to provide for assumptions made in the development and application of the repository total system model, and provide information for design reviews and subsystem performance reviews.

During FY 1996-1997, the staff will continue to conduct performance assessments of the repository system on an iterative basis, incorporating improved mechanistic models and system code methodology, as appropriate. The process uses predictive models and codes to obtain quantitative estimates of performance based on emerging data and increased understanding of the phenomena on which the models are based. This process will continue until DOE submits a license application containing an assessment of repository system performance.

During FY 1996-1997, the staff will continue to sponsor and oversee the management of the CNWRA, including management support and planning, expertise development and maintenance, and internal quality assurance. Also during FY 1996-1997, the staff and the CNWRA will continue to develop, operate, and maintain the Repository Program Database (RPD), and the staff will provide data entry services for the Technical Reference Document Database System at the CNWRA.

Each year during FY 1996-1997, with CNWRA support, the NRC will observe eight DOE quality assurance (QA) audits of DOE's HLW repository program. Also during this period, the staff will observe DOE surveillances, as needed, to evaluate in detail the implementation of DOE's program in specific technical areas. During FY 1996-1997, with CNWRA support, the staff will continue to review DOE's repository Site Characterization Plan semiannual progress reports, study plans, technical reports, design reports, topical reports, license application annotated outlines, and total system performance assessments. The NRC will review two DOE site suitability evaluation reports each year, the focus of DOE's New Program Approach, during FY 1996-1997. Approximately 20 study plans are expected in FY 1996 and 10 in FY 1997. Approximately 10 percent of the study plans, those which concern key technical uncertainties or issues, will receive a detailed technical review. Approximately 3 technical reports will be reviewed in detail each year during FY 1996-1997. During FY 1996-1997, the NRC will continue onsite liaison at Yucca Mountain to facilitate direct exchange of repository-related information with DOE and the State of Nevada, and to provide quality assurance and technical oversight of data, documents, and activities related to site characterization.

During FY 1996-1997, the NRC will operate and enhance the Advanced Computer System (ACS). The ACS is a computer network consisting of approximately five client/servers, 20 Unix workstations, 30 personal computers, and associated peripheral equipment. This system will assist the NRC staff in the review of an applicant's site characterization activities and engineered facilities for a decision on a license application. The NRC will continue to procure and install proprietary software for the ACS, such as advanced scientific visualization software, complex natural system modeling programs, and sophisticated engineering design calculations.

The NRC will continue to provide technical guidance to DOE during the design, engineering, certification, and fabrication of a prototypical family of road and rail transport container designs. During FY 1996-1997, the NRC expects to receive one application each year for certification of a new transportation package design from DOE for shipping HLW, as required by the Nuclear Waste Policy Act. Each review will require approximately two years to complete.

The NRC will continue to emphasize the importance of compatibility among storage, transportation, and disposal designs to minimize handling of spent fuel and HLW. During FY 1996-1997, the NRC will continue to consult with DOE on spent fuel storage to meet DOE's goal of making multi-purpose canisters (MPCs) and overpacks for storage and transportation available for deployment at reactor sites beginning in FY 1998. DOE will submit an application for certification of an MPC design for storage and transportation in FY 1996. NRC's review will continue for approximately two years through FY 1997.

High-Level Waste Research and Regulation Development

NRC's HLW research is conducted to: (1) develop the licensing tools and technical basis necessary to judge the adequacy of DOE's license application, (2) ensure sufficient independent understanding of the basic physical processes taking place at the geologic repository, and (3) maintain an independent but limited confirmatory research capability under NRC auspices. This research combines theoretical study with laboratory and field experiments and focuses on those technical issues that have the greatest uncertainty and importance to waste isolation. The technical issues of concern include the interaction of the waste form and container with the environment at the disposal site, the effects of geologic processes on long-term performance of the repository, the movement of radioactive material from the disposal facility to the accessible environment, and the long-term geologic stability of the Yucca Mountain site. Technical issues are identified on the basis of the results of independent judgment that is based on staff expertise regarding technical and regulatory needs, ongoing research, work with DOE and others, systematic regulatory analysis (SRA), and iterative performance assessment (IPA).

Engineered systems research responds to technical issues in the areas of controlled release; waste package; and repository design, construction, and operation. The NRC research will provide the support needed to address technical uncertainties identified through SRA and IPA and will provide information to models and codes used for assessing the performance of the engineered barrier system. This research will also address whether the short-term, small-scale tests and experiments on waste packages and other engineered components of the repository system that are performed by DOE in support of its license application are appropriate and sufficient to assess performance of engineered barrier systems within acceptable limits. Additionally, this research will address the effects of the coupled interactions between the repository system components (including the host rock and groundwater) in the zone affected by waste heat, and the effects on the long-term stability of the engineered facility (including shaft and borehole seals) in consideration of possible seismic effects.

During FY 1996-1997, the NRC will continue a 5-year program to evaluate coupled thermal/mechanical/hydrologic effects.

During FY 1996-1997, the NRC will continue a program to assess interactions between waste forms, waste packages, engineered components, and the repository environment in an attempt to evaluate the effect of these complex interactions on engineered system performance. In FY 1996, the program will be expanded to evaluate the effects of thermal loads on fractured tuff.

During FY 1996-1997, the NRC will continue experiments and modeling of long-term degradation mechanisms on DOE-selected waste package materials and designs.

In FY 1995, the NRC will complete a research program on the dynamics of volcanic eruptions and magmatic intrusions in the vicinity of the Yucca Mountain site and use the results to initiate work on modeling of volcanic systems. In FY 1996, the NRC will continue a program to apply models of mantle dynamics to the regional database of past and existing studies on the Basin and Range Province. In FY 1997, the NRC will issue reports on: (1) models of volcanic processes based on geologic processes in the mantle and (2) application of the models to possible igneous events in the vicinity of Yucca Mountain. Also in FY 1996, the NRC will continue research on seismic hazards for use in performance assessment and the evaluation of engineered systems design.

In FY 1996, the NRC will continue research on the tectonics of the Yucca Mountain region to ensure the capability to review DOE's understanding of the relationships between the long-term movements of fault-bounded blocks in the region and earthquakes, volcanism, and magmatism. In FY 1996, the NRC will issue a final report on mathematical models of tectonic processes.

In FY 1996, the NRC will issue a topical report that will evaluate: (1) the applicability of natural hydrochemical tracers to groundwater travel time determinations, and (2) the calibration of hydrologic parameters for flow and transport processes occurring over long periods. Also in FY 1996, the NRC will continue research on and issue a final report on hydrogeochemical modeling of near-field conditions.

NUCLEAR MATERIALS AND NUCLEAR WASTE PROGRAM: High-Level Waste

During FY 1995, the NRC will continue theoretical and modeling studies of partially saturated to saturated, fractured rock to assist in the evaluation of groundwater flow and transport models for the Yucca Mountain site.

During FY 1995, the NRC will continue research on the contaminant transport of uranium in geologic systems that are similar to Yucca Mountain with respect to geochemical processes. This research will test DOE models of radionuclide transport and chemical interactions.

In FY 1995, the NRC will continue work on sorption processes by assessing various approaches to modeling ion exchange and adsorption reactions, which could perform as an effective barrier to the transport of actinide elements to the accessible environment in actual site performance and should be reflected in DOE's long-term performance assessment calculations. In FY 1996, the NRC will issue a final report on the state of the sorption database and models for use in auxiliary analyses of radionuclide transport.

In FY 1995, the NRC will continue research to improve the understanding of coupled regional hydrologic and geological conditions and processes in an arid mountain system like Yucca Mountain. In FY 1996, issue a report on the mechanisms and conditions that create variations in groundwater recharge and perched water systems based on this research.

In FY 1995-1997, the NRC will assess methods of dating geologic events with emphasis on methods for dating volcanic eruptions and prehistoric earthquakes and faulting to provide a technical base for reviewing DOE's assessment of geologic events at the Yucca Mountain site.

In FY 1996, the NRC will conduct research and issue technical reports on the results of large-scale field tests in fractured tuff similar to Yucca Mountain tuff that will provide the NRC staff with the technical basis to review DOE site characterization methods. These technical reports will assess the uncertainties in measuring, interpolating, and extrapolating values of hydrologic parameters.

In 1996, building on the results of thermohydrology research done so far, the NRC will complete and issue the results of experiments on coupled thermal, hydrological, and chemical interactions near emplaced HLW to provide a technical base for reviewing DOE's assessment of the impact of waste heat on repository performance.

During FY 1995-1996, the NRC will reinitiate (after EPA issues a revised standard on HLW) and issue a proposed and a final rulemaking on Elimination of Inconsistencies between NRC regulations and EPA HLW standards, 10 CFR Part 60.

During FY 1995-1996, the NRC will consider the need to initiate and develop proposed Part 60 rulemakings for the following: (1) Implementation of the EPA HLW standards, (2) Pre-waste emplacement groundwater travel time/disturbed zone, and (3) emergency planning criteria for the HLW repository.

In FY 1996-1997, the NRC will continue to research subregional groundwater flow and transport processes and conditions relevant to the Yucca Mountain site utilizing the Apache Leap Tuff site studies and the CNWRA-developed modeling methodology and codes for partially saturated flow and transport in fractured, heterogeneous rock.

During FY 1996-1997, the NRC will continue field.studies on testing flow and transport models and concepts related to DOE's site characterization and performance assessment models of the Yucca Mountain site.

In FY 1995, the NRC will issue a final report prepared by the University of Arizona on its field validation studies in support of the INTRAVAL international project for studying validation of geosphere transport models, INTRAVAL. In FY 1996, the NRC will issue reports and make presentations on the findings of the INTRAVAL project.

During FY 1996-1997, the NRC will continue research of regional hydrologic processes in the Death Valley Basin related to DOE's site characterization and performance assessment of the Yucca Mountain Site with emphasis on identifying and evaluating alternative conceptual models for flow paths and discharge to the accessible environment.

In FY 1996, the NRC will issue topical reports on: (1) conceptual and mathematical models of matrix-fracture interactions in unsaturated welded tuff, and (2) the applicability and utility of massively parallel and heterogeneous computing methods in HLW performance.

In FY 1996, the NRC will initiate an experimental program to determine the effects of the interaction between thermally concentrated groundwaters, backfill minerals, and the waste package, and the consequences of these interactions for uncertainties in the prediction of engineered system performance. This project will continue in FY 1997 and will consider wet/dry cycling and partial wetting.

In FY 1996, the NRC will initiate a program of research on the metallurgical and electrochemical issues controlling uncertainties in engineered barrier performance. This program will continue in FY 1997 and will include the use of natural analogues.

In FY 1997, the NRC will complete an analysis of the consequences of microbiological action on tuff, including tuff contaminated with diesel fuel or other mining waste mining.

During FY 1996-1997, the NRC will continue research assessing the long-term durability of seals for boreholes and shafts in highly welded tuff. Also during FY 1996-1997, the NRC will continue research on laboratory testing and analysis of coupled thermal-hydrologic-mechanical-chemical (THMC) interactions in fractured tuff in a stepped fashion, starting with one way coupling and progressing to two, three and four way coupling for near field repository performance assessments.

Other High-Level Waste Activities

This activity provides the Commission with independent technical review of and advice on the management and disposal of HLW and legal advice and assistance on high-level waste management issues.

The Advisory Committee on Nuclear Waste (ACNW) acts as a focused center of expertise for independent technical review of and advice on HLW regulatory activities. To perform objective reviews and provide advice on the issues, the ACNW relies on highly qualified members and consulting specialists. The ACNW is responsible for reviewing and providing advice on all aspects of nuclear waste disposal facilities within the purview of NRC responsibilities, as directed by the Commission.

The efforts of the ACNW discussed in this activity pertain only to high-level nuclear waste disposal facilities and primarily focus on the proposed disposal facility. The ACNW efforts in the area of low-level waste (LLW) are discussed separately in the Low-Level Waste and Decommissioning Cost Center.

During FY 1996-1997, the ACNW will review DOE's site characterization progress reports mandated by statute, which update site characterization study plans and results of associated investigations, and revisions being proposed to the EPA HLW standards as directed by the Commission. This may include changes to the HLW standards that apply to the proposed Yucca Mountain repository as a result of the Energy Policy Act of 1992.

The ACNW will also review technical positions developed to clarify the intent of 10 CFR Part 60; results of the NRC staff's review of the DOE Office of Civilian Radioactive Waste Management's quality assurance program for the Yucca Mountain site characterization effort; NRC staff activities associated with the iterative performance assessment program for the proposed HLW repository, including issues associated with validation of predictive models of component behavior, development of associated guidance, and integration of findings into other technical efforts; development, testing and performance predictions of the waste package and engineered barrier systems; international programs and strategies for lessons applicable to domestic HLW disposal; proposals for a multi-purpose canister system to store, ship, and dispose of spent fuel; and development and implementation of technical assistance support at the CNWRA including results from the systematic regulatory analysis (SRA), e.g., license application review plan, and the SRA process itself. The Committee will visit the CNWRA.

The ACNW will (1) review NRC and DOE activities associated with the evaluation of the HLW management and disposal program from an overall systems perspective and (2) the Office of Nuclear Regulatory Research (RES) programs supporting the Office of Nuclear Material Safety and Safeguards (NMSS) Waste Management Division. During the planning period, the ACNW will visit the proposed Yucca Mountain HLW repository site in Nevada during development of the Exploratory Studies Facility to observe excavation procedures being used and the site characterization studies that are in progress. The ACNW will also undertake other studies and activities as directed by the Commission such as the potential impact of the DOE's recently revised and accelerated program approach at the Yucca Mountain site.

The Office of the General Counsel provides legal advice and assistance relating to storage, transportation, and disposal of HLW. This includes providing legal advice and assistance relating to the development and review of NRC regulations and guides pertinent to licensing a HLW geological repository and a monitored retrievable storage (MRS) or other interim storage facility. It also includes representing the NRC in all areas that may affect the evidentiary hearings on the HLW repository license application, through the review of material generated by the NRC and by contacts with persons and entities outside the NRC.

During FY 1996-1997, the Office of the General Counsel will:

- Provide legal support for the development and review of NRC regulations and guides pertinent to licensing and construction of the HLW repository and a MRS or other interim storage facility; represent the NRC staff in public rulemaking activities; analyze and interpret regulations, statutes, and cases relevant to NRC activities; and provide legal advice and assistance to RES and NMSS.

- Provide legal services to assist in the development of policy in conjunction with the licensing of the HLW repository and an MRS facility or of the interim Federal storage facility and provide advice and consultation to the staff on legal and policy aspects of health, safety, environmental, and safeguards issues arising from the licensing process.

- Provide legal services to the Licensing Support System (LSS) Administrator.

The LSS rule (10 CFR Part 2, Subpart J) assigns DOE the responsibility for designing and developing the LSS, and assigns NRC the responsibility of operating and maintaining it. The LSS is an electronic information management system that will contain the relevant licensing documents of DOE, the NRC, and other parties to the Commission's HLW repository licensing proceeding. The NRC will pursue a revised approach to the LSS program, which is consistent with program and budget responsibility options outlined in SECY 93-107 and approved by the Commission on June 4, 1993.

The Licensing Support System Administrator will:

- During FY 1995-1997, provide staff support to the LSS Advisory Review Panel and implement the consensus advice of the Panel.

- In FY 1996-1997, continue to implement the revised approach to the LSS program. Continuing implementation activities by the Office of Information Resources Management (IRM), OGC, and SECY will involve: (1) proposed and final rulemaking for appropriate changes to the LSS rule (10 CFR Part 2, Subpart J), (2) revisions to LSS Administrator's Compliance Assessment Program (CAP), and (3) negotiation of a memorandum of understanding with DOE.

- In FY 1996-1997, refine the LSS Administrator's CAP in coordination with the LSS Advisory Review Panel. This program will include establishing standards for submitting LSS material and developing a format and content guide for LSS participants' compliance program plans.

- Provide support to the independent LSS Administrator and as a party/contributor to the LSS. The schedule for staff support activities related to the further development of LSS specifications will be determined upon completion of DOE's ongoing requirements review and implementation planning. Activities requiring response to DOE work will cover such areas as setting standards/specifications for header indexing, submitting documents and loading schedules, and reviewing design specifications for LSS capture and search system components.

MANAGEMENT AND SUPPORT PROGRAM

MANAGEMENT AND SUPPORT PROGRAM

(Dollar amounts in tables represent thousands of dollars ($K). In text, whole dollar amounts are used. Staff numbers represent full-time equivalents (FTEs).)

Total FY 1996 Estimate $166,778,000

			FY 1996 Estimate		FY 1997 Estimate	
	FY 1994 Enacted	FY 1995 Enacted	Request	Change from FY 1995	Planning Estimate	Change from FY 1996
Budget Authority by Function ($K)						
Salaries and Benefits	58,676	57,919	60,014	2,095	58,567	-1,447
Contract Support	100,696	103,839	104,970	1,131	100,577	-4,393
Travel	1,964	1,799	1,794	-5	1,744	-50
Total	161,336	163,557	166,778	3,221	160,888	-5,890
Budget Authority by Cost Center ($K)						
Policy and Direction	18,688	17,862	18,323	461	17,954	-369
Resource and Administration	129,689	131,224	132,137	913	127,792	-4,345
Special Technical Programs	12,959	14,471	16,318	1,847	15,142	-1,176
Total	161,336	163,557	166,778	3,221	160,888	-5,890
Full-Time Equivalent Employment by Cost Center						
Policy and Direction	187	178	178	0	178	0
Resource and Administration	519	510	508	-2	502	-6
Special Technical Programs	91	96	100	4	100	0
Total	797	784	786	2	780	-6

Changes in Budget Authority ($K)				
	FY 1996 Change from FY 1995			FY 1997 Change from FY 1996
Cost Center	Current Services	Program Requirements	Total	Total
Policy and Direction	541	-80	461	-369
Resource and Administration	4,268	-3,355	913	-4,345
Special Technical Programs	444	1,403	1,847	-1,176
Total	5,253	-2,032	3,221	-5,890

MANAGEMENT AND SUPPORT PROGRAM

EXPLANATION OF RESOURCE CHANGES FOR CURRENT SERVICES

The change for current services reflects (1) increases in personnel compensation of 2.0 percent general raise plus 1.21 percent locality raise expected in calendar year (CY) 1995, 2.4 percent expected in CY 1996 within-grade increases, and several minor adjustments, such as the varying number of paydays, the increased number of staff in the Federal Employees Retirement System, and the increased cost of benefits; and (2) increases for contract support and travel for inflation estimated at 3.0 percent in FY 1996.

EXPLANATION OF RESOURCE CHANGES FOR PROGRAM REQUIREMENTS

Resource and Administration

Resource decreases in FY 1996 are due to completion of start-up costs for high performance computing, planned reductions in the microcomputer replacement program, and reductions in computer hardware maintenance costs and systems development efforts. Resources also decrease for supervisory management development courses reflecting the agency's commitment to reducing the supervisor to employee ratio by one-half in response to the September 11, 1993, Presidential memorandum, "Streamlining the Bureaucracy." The resource decrease in FY 1996 also reflects completion of refurbishment for One White Flint North and decreased costs for capital equipment as leased equipment is purchased. These savings are partially offset by increased costs for Region II's planned relocation to the New Atlanta Federal Center in early CY 1997.

Special Technical Programs

The resource increase in FY 1996 is primarily for activities to strengthen the Agreement State Program, including developing additional training courses and workshops to provide Agreement State personnel with information on developing several new initiatives. The resources will also assist with the development and implementation of the Integrated Materials Performance Evaluation Program and assist applicant states, including Pennsylvania, Ohio, Massachusetts and Oklahoma, to become Agreement States.

MANAGEMENT AND SUPPORT PROGRAM

DESCRIPTION OF PROGRAM

The Management and Support Program encompasses NRC central policy direction, legal advice for the Commission, analysis of long-term policy issues, administrative proceeding review and advice, liaison with outside constituents and other government agencies, financial management, all administrative and logistical support, information resources management, executive management services for the Commission, personnel and training, and matters involving small and disadvantaged businesses and civil rights. This program comprises the following three cost centers: Policy and Direction, Resource and Administration, and Special Technical Programs.

The funds and staff for each of the three cost centers are discussed on pages 143 through 164. The contract support funds are allocated for services and products obtained from commercial contractors and other Federal agencies such as the General Services Administration and the Office of Personnel Management. The narrative that follows describes these cost centers and addresses the reasons why the resources are needed.

MANAGEMENT AND SUPPORT PROGRAM

Policy and Direction Cost Center

			FY 1996 Estimate		FY 1997 Estimate	
	FY 1994 Enacted	FY 1995 Enacted	Request	Change from FY 1995	Planning Estimate	Change from FY 1996
Budget Authority by Function ($K)						
Salaries and Benefits	16,918	16,045	16,541	496	16,222	-319
Contract Support	1,076	1,295	1,248	-47	1,215	-33
Travel	694	522	534	12	517	-17
Total	18,688	17,862	18,323	461	17,954	-369
Budget Authority by Activity ($K)						
Commission	4,280	3,776	3,899	123	3,831	-68
Commission Appellate Adjudication	660	575	593	18	583	-10
Congressional Affairs	951	860	887	27	873	-14
General Counsel	5,543	5,434	5,575	141	5,435	-140
Public Affairs	1,547	1,530	1,497	-33	1,467	-30
Secretariat	2,908	2,879	2,973	94	2,919	-54
Executive Director for Operations	2,799	2,808	2,899	91	2,846	-53
Total	18,688	17,862	18,323	461	17,954	-369
Full-Time Equivalent Employment by Activity						
Commission	41	37	37	0	37	0
Commission Appellate Adjudication	7	6	6	0	6	0
Congressional Affairs	10	9	9	0	9	0
General Counsel	59	58	58	0	58	0
Public Affairs	16	15	15	0	15	0
Secretariat	28	27	27	0	27	0
Executive Director for Operations	26	26	26	0	26	0
Total	187	178	178	0	178	0

This cost center covers NRC central policy direction, legal advice for the Commission, analysis of long-term policy issues, administrative proceeding review and advice, liaison with outside constituents and other government agencies, and executive management services for the Commission.

This cost center comprises the following seven activities: Commission, Commission Appellate Adjudication, Congressional Affairs, General Counsel, Public Affairs, Secretariat, and Executive Director for Operations.

Commission

The Commission is the governing body of the Nuclear Regulatory Commission. It is responsible for determining the fundamental policy and for guiding staff offices to ensure that the civilian use of nuclear energy is regulated in a manner consistent with the public health and safety, environmental quality, national security, and antitrust laws.

Commission Appellate Adjudication

The Office of Commission Appellate Adjudication assists the Commission in its disposition of appeals of licensing board decisions and other adjudicatory matters coming before the Commission. The office reviews administrative proceedings and keeps the Commission advised of decisions that must be made. It consults directly with the Commission, advising it in formulating opinions and on the discretionary exercise of its supervisory authority over agency adjudication. The office monitors cases pending before licensing boards and associated matters, provides analyses and options to the Commission, and drafts adjudicatory decisions and orders, as necessary.

Congressional Affairs

The Office of Congressional Affairs assists the Chairman, the Commissioners, and senior NRC staff with congressional matters; coordinates relations between the agency and Congress; and serves as liaison between the Commission and congressional committees, congressional subcommittees, and individual members of Congress.

The primary objective of this activity is to ensure that Congress is kept fully and currently informed about agency activities and that congressional requests and inquiries are responded to in a timely manner. The Office of Congressional Affairs provides the Chairman, the Commissioners, and senior NRC staff with relevant and current information pertaining to major legislative activities likely to affect the agency. Additionally, the Office seeks to ensure that individual members of Congress are kept currently informed about significant NRC activities that might affect their respective States and districts.

General Counsel

The General Counsel is the Commission's chief legal advisor. The Office of the General Counsel (OGC) advises the Commission and the Office of Commission Appellate Adjudication on adjudicatory matters requiring the Commission's decision; represents the Commission in courts of appeal proceedings to review Commission orders and rules; and, in cooperation with the Department of Justice, represents the Commission in court proceedings affecting NRC's programs in the Federal district courts and the Supreme Court.

The OGC provides legal advice to the Commission on the implementation of employee conduct regulations, external investigations and internal audits, and on the application of Federal openness laws to Commission functions and on rulemaking activities; drafts proposed legislation for Commission consideration and advises the Commission on the legal and policy implications of legislation, proposed by others, that is referred to the Commission for comment by OMB or Congress; provides legal services to NRC offices to assist them in accomplishing their mission; and represents the NRC staff in public rulemaking hearings.

The OGC also provides advice and assistance to NRC offices involved in interagency and international agreements, procurement, intellectual property, budget, security, and administrative functions, and represents the NRC in administrative hearings involving procurement, personnel, personnel security, labor relations, and equal employment opportunity matters.

Public Affairs

The Office of Public Affairs assists the Chairman, the Commissioners, and senior NRC staff by managing and directing the NRC's public affairs program. This includes developing and administering agency policies and procedures for informing the public and the news media of NRC policies, programs, and activities; informing NRC management of media coverage of activities of interest to the agency; working with civic groups and administering a cooperative program with public schools; advising management on conducting public meetings; and providing information on NRC activities to the news media and general public.

MANAGEMENT AND SUPPORT PROGRAM: Policy and Direction

Secretariat

The Office of the Secretary of the Commission provides executive management services to support the Commission and to implement Commission decisions; advises and assists the Commission and staff on planning, scheduling, and conducting Commission business, including preparation of internal procedures; and prepares the Commission's meeting agenda. The office codifies Commission decisions in memoranda directing staff action, monitors staff compliance of pending actions, and tracks commitments through the automated Commission tracking system; manages the staff paper and COMSECY systems; processes and controls Commission correspondence; maintains the Commission's official records and acts as Freedom of Information coordinator for Commission records; maintains the official adjudicatory dockets of the Commission; processes and controls motions, pleadings, and appeals filed with the Commission and individual licensing boards; and issues and serves adjudicatory decisions and orders on behalf of the Commission and individual licensing boards. The office receives and distributes comments from the public in rulemaking proceedings and maintains the official rulemaking docket; issues proposed and final rules on behalf of the Commission; directs and administers the NRC historical program; operates and manages the NRC Public Document Room and its Bibliographic Retrieval System for providing access to members of the public, including representatives of foreign countries, to NRC's publicly available documents; and functions as the NRC Federal Advisory Committee Management Officer. The Office of the Secretary will also continue to expand and integrate office automation initiatives into the Commission's administrative systems to improve efficiency in the Commission's decision making process, the management of work products, and responsiveness to the public.

Executive Director for Operations

The Office of the Executive Director for Operations (EDO) manages the agency's strategic planning process, examines policy issues, supervises and coordinates operational activities of program and EDO staff offices, and implements the Commission's policy directives pertaining to these offices. The EDO is the Chief Financial Officer of the Commission and the chief operations and administrative officer. The EDO is authorized and directed to discharge such licensing, regulatory, and administrative functions of the NRC and to take actions that are necessary for day-to-day operation of the agency.

MANAGEMENT AND SUPPORT PROGRAM

Resource and Administration Cost Center

			FY 1996 Estimate		FY 1997 Estimate	
	FY 1994 Enacted	FY 1995 Enacted	Request	Change from FY 1995	Planning Estimate	Change from FY 1996
Budget Authority by Function ($K)						
Salaries and Benefits	34,194	33,929	34,967	1,038	34,010	-957
Contract Support	95,091	96,844	96,705	-139	93,329	-3,376
Travel	404	451	465	14	453	-12
Total	129,689	131,224	132,137	913	127,792	-4,345
Budget Authority by Activity ($K)						
Controller	11,726	12,217	12,581	364	12,137	-444
Administration	54,866	50,718	51,993	1,275	49,942	-2,051
Information Resources Management	44,673	48,150	48,254	104	46,876	-1,378
Personnel	6,053	6,101	6,220	119	6,088	-132
Training	4,211	4,152	3,732	-420	3,637	-95
Small Business and Civil Rights	1,000	1,034	1,063	29	1,039	-24
Permanent Change of Station	7,160	8,852	8,294	-558	8,073	-221
Total	129,689	131,224	132,137	913	127,792	-4,345
Full-Time Equivalent Employment by Activity						
Controller	107	107	107	0	104	-3
Administration	191	182	180	-2	177	-3
Information Resources Management	141	141	141	0	141	0
Personnel	64	64	64	0	64	0
Training	9	9	9	0	9	0
Small Business and Civil Rights	7	7	7	0	7	0
Total	519	510	508	-2	502	-6

This cost center covers financial management, administrative and logistical support, information resources management, personnel, and training.

MANAGEMENT AND SUPPORT PROGRAM: Resource and Administration

This cost center comprises the following seven activities: Controller, Administration, Information Resources Management, Personnel, Training, Small Business and Civil Rights, and Permanent Change of Station.

Controller

The Office of the Controller provides the overall financial management of the agency. This activity includes exercising budget and accounting responsibilities, providing agency senior management with analyses of policy, program, and resource issues; and ensuring adherence to applicable legislation, Office of Management and Budget (OMB) circulars and bulletins, and other Governmentwide financial management directives, including the Chief Financial Officers (CFOs) Act of 1990, the Omnibus Budget Reconciliation Act of 1990, the Federal Employees Pay Comparability Act of 1990, the Federal Managers' Financial Integrity Act of 1982, the Prompt Payment Act and amendments, and OMB Circulars A-123, "Internal Control Systems", A-127, "Financial Management Systems," and A-134, "Financial Accounting Principles and Standards."

Compliance with the CFOs Act includes developing procedures and activities in concert with the Inspector General to produce a financial statement that is consistent with OMB Circular A-134 and audited; assisting offices as required in reviewing and revising NRC management directives and procedures for conformance to OMB circulars and with the requirements of the Act; developing and using performance measures to assess program and financial performance; preparing periodic reports and analyses on financial management, including an annual audited financial statement to the Chairman and the Director of OMB and periodic reports to the Commission on budget execution; and conducting periodic reviews of agency financial management activities and providing training to allottee financial managers in all aspects of compliance with the CFOs Act.

The second legislative requirement, the Omnibus Budget Reconciliation Act of 1990, requires the NRC to recover 100 percent of the agency's budget authority through license and annual fees. Activities to meet this requirement include developing and issuing rules that reflect recovery of 100 percent of the budget authority each year; providing policy, processing applications, and analyzing fee-related data for approximately 3,000 reactor and fuel cycle license amendments and issuing the resultant 1,300 bills; analyzing data and processing approximately 2,000 bills for reactor and fuel cycle inspections; processing more than 5,000 incoming applications subject to flat fees; issuing approximately 8,000 annual fee bills per year; and responding to Congressional constituent and licensee correspondence regarding fee billings.

To fully comply with the requirements of the Federal Employees Pay Comparability Act of 1990, the NRC is changing to a new payroll/personnel system, which will be fully implemented in FY 1997. The current payroll system will be unable to meet future operational requirements.

Implementation of the requirements of the Federal Managers' Financial Integrity Act of 1982 and OMB Circulars A-123 and A-127, includes enhancing the NRC management control program, improving financial systems, providing training, and preparing all required reports to the President and Congress.

Compliance with the Prompt Payment Act includes processing more than 40,000 commercial vouchers for payment in a timely manner and accounting for and reconciling these payments.

Financial planning, a key part of this activity, includes coordinating the NRC strategic planning process, including developing instructions and procedures and modifying goals and objectives; providing guidance and resolving Commission questions; modifying guidance to implement Commission decisions; developing and issuing the agency's Five-Year Plan, which supports the agency's budget requests; and developing for this budget request to OMB a discussion of the status and plans for financial management throughout the agency to include a vision statement, a discussion of goals and strategies for implementing financial management improvements, a discussion of the current financial systems structure, and plans for moving to the targeted systems structure.

The Controller also manages the NRC internal budget development process by preparing guidance and instructions, reviewing and modifying budget structure, performing analyses for the CFO's use in decisionmaking, and maintaining detailed records and analyses to support the budget. Interaction with the Commission to resolve questions and implement Commission decisions is required. The Controller also develops the NRC budget request for OMB and Congress and manages the overall budget justification process.

The Office of the Controller oversees agency budget execution by preparing quarterly base tables for Congress; developing monthly performance reports on budget execution for the Executive Director for Operations (EDO) and quarterly reports for the Commission; performing midyear reviews and other periodic budget execution reviews; managing the allotment and financial plan for Commission and EDO offices, including certification of the availability of funds; managing the agency's salaries and benefits allocation and estimating the agency's salaries and benefits requirements; ensuring administrative control of funds by maintaining expertise and interpreting appropriation law and policies; obtaining apportionments and reapportionments from OMB; managing the NRC allotment and financial plan process; and maintaining agency policy standards and procedures applicable to the administrative control of funds.

Other financial management functions and responsibilities in this cost center include performing required debt-collection activity; maintaining travel services while processing over 20,000 travel authorizations and travel vouchers per year; managing the agency relocation services program; managing the NRC imprest fund; maintaining accounting policies; providing accounting training; developing and maintaining financial systems; providing financial and accounting data and reports to agency management and other Federal agencies; maintaining appropriate master records for financial management; maintaining the NRC general ledger, including reconciling billings, collections, travel, and NRC accounts with Department of Treasury accounts; and developing and issuing the agency's Information Digest.

Administration

This activity provides for centralized administrative and logistical support services for the agency, specifically in the areas of procurement, duplicating, facilities and property management, transportation, security, printing, publications services, mail and distribution services, Freedom of Information Act requests, privacy protection, rulemaking support, and local public document rooms (LPDRs), as well as certain support services for the regional offices.

This activity includes contract support funds for rent payments to the General Services Administration and real property operations costs totaling $22.5 million in FY 1995 and $24.3 million in FY 1996. These mandatory payments represent more than 55 percent of the total contract support costs for this activity.

Facilities and property management are major portions of this activity. Key activities include managing the GSA building delegation program, space acquisition and utilization, space renovations, building management, supply and warehouse operations, and office and equipment moves. This activity also includes the development and administration of programs for motor vehicle operations, transportation services, conservation, and recycling.

Other requirements for contract support funds include transportation of persons and things, including the rental or lease of motor vehicles from commercial vendors and government motor pools; funding for subsidies for public transit and for freight and express services; duplicating and contract printing; photography services; security services, including costs for guard services, personnel security investigations, and the NRC drug testing program to protect NRC personnel, property, and information; supplies, materials, postage, and equipment, which include consumable supplies and office furniture, filing equipment, office machines, general equipment, draperies, and carpeting, and other operational costs, which cover alterations and supplementary heating, ventilation, and air conditioning; parking; automotive maintenance; fuel and tires; maintenance of office machines and security equipment; duplicating, typesetting, and photography equipment; audiovisual services; assistance to LPDRs; translations; contract typing; mail and messenger services; and document distribution services.

This activity is conducted to develop and implement agencywide contracting policies and procedures; direct and coordinate contracting activities; negotiate, award, administer, and close out contracts, task orders, purchase orders, grants, cooperative agreements, and interagency agreements; provide advice and assistance to offices on procurement regulations and requirements and methods of meeting program objectives consistent with such requirements; settle claims and terminations; perform other normal duties of a contracting office as specified in the Federal Acquisition Regulation and the Federal Information Resources Management Regulation; provide oversight for regional procurement activities to ensure small purchase actions are awarded in accordance with procurement regulations and agency policy; manage the Department of Energy (DOE) laboratory project, including providing oversight to ensure that sound contracting principles are applied to DOE laboratory agreements; assist program offices in cost negotiation and administration of laboratory agreements; develop agency policy for placement and monitoring of DOE laboratory agreements; conduct training for agency staff in contract management; and develop and implement screening criteria to determine if an organizational conflict of interest exists in placing work with DOE; implement the Procurement Reinvention Laboratory to substantially reduce the lead time and staff resources necessary to conduct NRC procurements, maximize both technical and cost competition, and increase the award of contracts to small businesses; and issue requests for quotations, review vendor price proposals, and award small purchase actions using electronic commerce technology.

This activity is also conducted to develop policies, procedures, and rules for implementing the Freedom of Information Act, Privacy Act, Federal Register Act, and Regulatory Flexibility Act; develop and review amendments to agency regulations and petitions for rulemaking; provide advice and assistance to offices and the public on filing petitions for rulemaking; administer the agency's management directives system; provide a centralized system for announcing public meetings of the staff; and direct and coordinate local public document room activities near all reactor sites and near certain other fuel cycle and waste sites throughout the United States. This activity also provides centralized agencywide publication control and processing, word processing and scanning services, technical writing and editing services, mail and distribution services, and translation services; publishes regulatory and technical reports; provides direction and coordination of agencywide document composition, duplicating, and contract printing through Government Printing Office printing contractors; copy management, photography, and audiovisual and related services; and automated reports processing and proofreading services agencywide, including electronic communication with the regional offices and contractors.

The agency's overall security program is designed to protect NRC personnel, property, and information. This includes the safeguarding of restricted data and national security information documents or material at all NRC offices and at contractor, licensee, certificate holder and other facilities containing such documents or material; the safeguarding of sensitive intelligence information and providing intelligence support services to the Commission and senior management; the operation of NRC secure communications systems which process more than 23,000 multipage messages and 3,500 secure facsimiles; the NRC drug testing program, which requires approximately 900 random drug tests annually of employees and approximately 50 tests of applicants; the physical protection of personnel and property at headquarters and other agency locations; the NRC criminal history check program, under which approximately 60,000 fingerprint cards are processed each year; implementing the National Industrial Security Program and new national security-related Executive Orders' requirements; and the yearly processing and maintenance of the 900 initial and 1,000 continuing security clearances and/or special nuclear material access authorizations for agency employees, consultants, contractors, licensees, and others, as well as security approval for access to Unclassified Safeguards Information, unescorted access to NRC facilities and to nuclear power plants, and access to NRC sensitive automated information systems and data by NRC contractors.

Under the facilities security program, security personnel conduct facility/organization security surveys of headquarters, regional office, licensee, certificate holder, and contractor interests to ensure protection of classified information and sensitive, unclassified information and NRC personnel and property; provide security support to the Commission, Atomic Safety and Licensing Board Panel, Advisory Committee on Reactor Safeguards, and other NRC offices during public meetings nationwide; assist regional office staffs, as requested, with the installation of security systems, such as key card reader access control systems compatible with the system used at headquarters; manage and administer contract security force activities for contract compliance and cost efficiencies; manage and administer the physical security program for all headquarters buildings, including visitor control (50,000 visitors annually), the operation of a comprehensive access control and alarm system, the issuance of NRC photo identification badges, and the deployment of protective personnel. Security personnel also manage a security awareness program to ensure employees are aware of their responsibilities with respect to the protection of NRC assets, including classified and sensitive unclassified information.

Information Resources Management

This activity provides for centralized information resources management in the areas of computer, telecommunications, and information support services, including planning and program management, nationwide telecommunications equipment and services, systems development, data administration, office automation, microcomputers, records management and services, library services, document control and management, computer operations, computer security, user support services, and graphics. It provides for the essential services and technical means used by the agency staff to receive, store, retrieve, manipulate, process, and transmit information in support of the agency's health and safety mission. The activity is managed by the Office of Information Resources Management (IRM) and in the regions as appropriate.

IRM provides for strategic planning for information technology for the agency. Key elements in the strategy are: 1) the maintenance of a robust and technologically current office automation and telecommunications infrastructure, 2) implementation of a new text and image management system for agencywide use, and 3) improvement in the information technology (IT) area by modifying the IT planning and budgeting process and working with an IT Council.

IRM reviews information management activities, programs, and systems to determine if they are meeting NRC's requirements in an efficient and cost-effective manner. It identifies any potential areas in which technology or centralization can be used to improve efficiency and effectiveness for cost avoidance. This includes participation in an IRM review program to measure the effectiveness and efficiency of the agency's IRM program and compliance with the Paperwork Reduction Act of 1980 and the Federal Information Resources Management Regulation, Subpart 201-221, which require the NRC to conduct periodic reviews of information resources management activities. IRM will also continue to acquire, evaluate, demonstrate, develop, and begin the implementation of new initiatives and pilot projects in such areas as computer-aided design and modeling, electronic data interchange, full text and image technologies, and other technologies that have the potential for improving the performance of NRC's mission.

Activities related to computer and telecommunications services include the evaluation, support, maintenance, and purchase of telecommunications equipment and services and the development of the architecture for the agency's telecommunications network. Additional activities include maintenance, support, and improvements of existing NRC automated systems; development of shared data bases and new systems; and office automation planning and the purchase of microcomputer hardware and software and local area networks.

IRM provides maintenance and support for emergency and routine telecommunications services for the agency. Specifically, this includes telecommunications for the NRC Operations Center and maintenance of the Emergency Telecommunications System, as well as routine local and long-distance service.

IRM maintains and enhances current computer applications to support staff demands for information on nuclear facilities and safety issues. Applications include computer systems such as the Safety Issues Management System, Master Inspection Planning System, and Licensing Management System. This includes continuing to develop systems to meet new office requirements and replacing older systems in need of redevelopment. In particular, IRM will continue efforts for the replacement of the aging personnel and payroll systems, implement applications needed in support of the high-level waste program, and implement applications to support efforts to more effectively manage agency contracts.

IRM also provides office automation capabilities to NRC headquarters staff. Microcomputer-based local area networks deployed throughout the agency provide enhanced intra-agency communication; improve the capability to electronically create, modify, transfer, and share documents and data; improve personal productivity; and streamline administrative functions. These networks will be evaluated beginning in FY 1995. In FY 1994, IRM began a microcomputer replacement program that will maintain a technologically current inventory of microcomputers capable of running the applications needed. This will help ensure that by FY 1996, NRC's inventory of microcomputers will be maintained, on the average, within one generation of the latest technology.

In regard to information support services, IRM provides for the management of the flow of information related to the agency's regulatory, research, inspection, legal, management, and external relations programs, and provides technical support for the staff in the use of information technology, including computer services, library and records management services, document and drawing management, graphics services, scientific code dissemination, commercial data base services, and user training and assistance. Additionally, IRM ensures agency compliance with statutory requirements under the Paperwork Reduction Act of 1980, the Federal Records Act, the Federal Information Resources Management Regulation, and the Computer Security Act of 1987.

IRM also provides agencywide records management and library services. This includes:

> Ensuring that all record collections have National Archives and Records Administration or GSA-approved disposition authorities; maintaining the file center, the agency's archival facility, and the automated accountability system of agency records; coordinating the agency's vital records program; providing continued support

to preserve the agency's official records in a secure, environmentally controlled facility; and providing pickup and delivery services between the contractor site and all NRC buildings, the Federal Records Center, and the recycling center. During FY 1994, large quantities of documents were retired from central files.

- Managing the agency's Information Collection Budget to ensure compliance with the requirements of the Paperwork Reduction Act; continuing to work with other NRC offices to reduce the burden imposed primarily on NRC licensees; establishing procedures as required by OMB Circular 89-18, "Fiscal Year 1990 Information Collection Budget," in order to minimize the effort required of NRC licensees while ensuring that legislative requirements are met; and continuing the routine review of all agency proposed and final rules, policy statements, and regulatory guides to ensure that all information collection requirements are consistent with OMB's requirements.

- Enhancing the agency's records management program with special emphasis on decommissioning records in response to a General Accounting Office report entitled "NRC's Decommissioning Procedures Need To Be Strengthened" (May 1989).

- Providing library services, including the acquisition and maintenance of scientific and technical books, journals, reports, standards, codes, and microforms to support the agency.

- Providing access to off-site commercial data bases, both bibliographic and source (actual data), and providing services to cataloging and interlibrary loan.

- Exploring the feasibility of electronic communications among NRC licensees and the public and continuing to explore the compact disc/read-only memory application for more efficient and effective dissemination, storage, and retrieval of information.

IRM currently maintains the Nuclear Documents Management System/Repository (NUDOCS), the centralized search and retrieval system for licensing, enforcement, technical, and adjudicatory documentation. The information available through NUDOCS consists of on-line bibliographic data and off-line microfiche for all captured documents as well as the full text of certain categories of documents. NUDOCS information products are critical to the functioning of the agency's headquarters and local public document rooms, and have become integrated into the way the NRC conducts its business. IRM is also examining more efficient and cost-effective ways of document processing and dissemination, including the exchange of electronic documentation, both internal and external to the NRC.

IRM, with input from other NRC offices, is currently working to identify agencywide requirements for a new document system.

Information technology services include training; microcomputer user support; installation, maintenance, and assistance for computer systems; graphics design; and consultation services. IRM provides access to timesharing facilities, such as the Federal Computer Center at the National Institutes of Health (NIH), the Idaho National Engineering Laboratory (INEL), and the Oak Ridge National Laboratory (ORNL).

IRM also implements and makes available scientific codes so that they may be tested or used in the regulatory or safety research programs, continues to meet NRC staff requirements for scientific code support, and assists NRC staff and contractors in preparing all necessary materials to submit a scientific computer code package to Federal software centers; responds to walk-in and telephone requests for codes with information on their availability; continues to install codes as required by the NRC technical programs on INEL, NIH, or NRC computers for use in regulatory and research programs; annually updates the inventory of documented NRC scientific software; continues to provide support for microcomputer-based tools, such as those used to establish the reliability of reactor systems and to analyze the risk of reactor accidents; and completes the training programs for agency use of computer codes.

IRM is also responsible for meeting the requirements of the Computer Security Act of 1987 (Public Law 100-235); specifically, to identify any computer system containing sensitive information; establish a plan for the security and privacy of each system identified; conduct a security awareness and good practices training program for all employees involved with the management, use, or operation of any computer system in the agency; and ensure compliance with OMB Circular A-130, "Management of Federal Information Resources," and draft NRC Directive 12.5, "NRC Automated Information Systems Security Program."

Personnel

The Office of Personnel (OP) provides effective recruitment, organization, utilization, and development of the agency's human resources through an integrated career management system; plans and implements NRC personnel policies, programs, and services; administers agencywide recruitment, staffing, compensation, and position management; provides for training, awards and benefits administration, employee health assistance, and counseling services; provides labor relations policy guidance and negotiates the collective bargaining agreement; collects, analyzes, and provides data on NRC's work force and supports agencywide equal employment opportunity and affirmative action programs and activities; and provides administration and guidance for the human resources strategic planning effort.

Personnel management and organizational activities include recruitment, staffing, and placement; compensation; position management; administration of employee and executive awards; personnel policy and program development; performance management; Federal labor relations and employee relations services; organization and management analyses; support to the Executive Resources Board and its subgroups, including the Performance Review Board and Recertification Performance Review Board; the occupational health and safety program; the wellness/fitness program; and the child development center. Personnel management activities also include equal employment opportunity programs, which encompass minority career development; handicapped employee and upward mobility programs; and special recruitment and other specialized activities, such as the differing professional opinion process.

OP also provides secretarial and clerical support to meet the short-term needs of headquarters offices through the assignment of Central Support Unit staff or acquisition of temporary services from the private sector. OP manages this function in response to agency requirements.

Training

Training and development activities by the Office of Personnel (OP) provide all education and training (other than reactor technology and associated technical training under the purview of the Technical Training Center) for agency headquarters and regional staff. This includes graduate fellowships; scholastic support of cooperative education program students; retraining of NRC employees; support for the Technical Training Center qualifications training; individual employee, supervisory, management, and executive development training; equal employment opportunity and affirmative action; career development counseling; risk analysis; regulatory process; and other internal and external training and development activities to improve employee performance. OP also provides for organizational development, including management succession activities, team building, and rotational assignments, and for agencywide support for improving training delivery through the development and application of improved or alternative methods and increased employee training opportunities utilizing the Professional Development Center.

MANAGEMENT AND SUPPORT PROGRAM: Resource and Administration

Small Business and Civil Rights

The Office of Small Business and Civil Rights (SBCR) identifies small and minority businesses and those run by persons that are capable of meeting NRC contractual requirements and provides assistance to them on how to do business with the agency. The activity also includes the functions and duties related to equal employment opportunity and civil rights matters within the NRC to increase the employment of minorities and women in the agency and ensure a climate for improved employee morale by promoting and maintaining counseling activities and supporting advisory committees made up of special emphasis groups. The activity comprises three major programs: (1) the Small and Disadvantaged Business Utilization Program, (2) the Civil Rights Program, and (3) the Federal Women's Program.

Activities under the Small and Disadvantaged Business Utilization Program are authorized by Sections 8 and 15 of the Small Business Investment Act of 1958, as amended. Responsibilities include locating and referring small and disadvantaged businesses for procurement awards, negotiating a monetary goals program with the Small Business Administration for awarding NRC contracts to small and disadvantaged businesses and monitoring the results on a quarterly basis, monitoring NRC's procurement list to ensure equitable participation of small and disadvantaged businesses, offering advice and consultation to NRC offices on capabilities of small and disadvantaged business firms, disseminating information to such firms interested in NRC contracting procedures, and assisting historically black colleges and universities to secure grants and contracts from the NRC.

The civil rights activities are responsive to the Civil Rights Act of 1964, as amended, and are implemented by 29 CFR Part 1614 of the Equal Employment Opportunity Commission (EEOC) regulations. The activities include developing, monitoring, and evaluating NRC's Affirmative Action Program; advising and assisting the Office of Personnel on the recruitment of minorities and women and EEO training for managers and employees; providing advice to senior management on civil rights and EEO matters; and developing and administering EEO counseling activities and the EEO complaints process. Activities also include supporting special emphasis and employee advisory groups; annually setting goals for the hiring and advancement of minorities and women; tracking agency performance on all affirmative action and EEO matters; and addressing any EEO issues resulting from financial assistance provided under Section 274 of the Atomic Energy Act of 1954, as amended, and the agency program for providing grants to colleges and universities.

The Federal Women's Program (FWP) was established in October 1967 as a result of Executive Order 11375, which added gender to other prohibited forms of discrimination in the Federal Government. In August 1969, Executive Order 11478 integrated the FWP into the overall Equal Employment Opportunity Program, placing it under the stewardship of agency directors of equal employment opportunity. The purpose of the FWP is to expand and enhance opportunities for NRC women employees. This includes advising management and EEO officials of any policies and practices that are, or appear to be, sex discrimination or that serve as barriers in the workplace; staying in touch with the NRC work force to identify any problem areas; assisting the Office of Personnel in recruitment actions directed toward women; participating in developing the agency affirmative action plan; maintaining communication with women's organizations and participating in meetings, conferences, and seminars within and outside the agency on issues relating to the FWP; and coordinating and supporting the Federal Women's Program Advisory Committee.

Permanent Change of Station

This activity is carried out to ensure that NRC personnel who are required to change duty stations are afforded the required relocation services and other expenses related to permanent change of station (PCS) services and PCS moves, such as expenses incurred in connection with the sale of a residence, relocation of household goods, subsistence while occupying temporary quarters, and other miscellaneous moving expenses.

MANAGEMENT AND SUPPORT PROGRAM

Special Technical Programs Cost Center

			FY 1996 Estimate		FY 1997 Estimate	
	FY 1994 Enacted	FY 1995 Enacted	Request	Change from FY 1995	Planning Estimate	Change from FY 1996
Budget Authority by Function ($K)						
Salaries and Benefits	7,564	7,945	8,506	561	8,335	-171
Contract Support	4,529	5,700	7,017	1,317	6,033	-984
Travel	866	826	795	-31	774	-21
Total	12,959	14,471	16,318	1,847	15,142	-1,176
Budget Authority by Activity ($K)						
International Programs	6,128	6,874	6,990	116	6,612	-378
State Programs	3,527	3,092	4,672	1,580	4,210	-462
DOE/DOD Projects	279	363	372	9	365	-7
Educational Grants	638	1,050	1,000	-50	992	-8
Small Business Innovation Research (SBIR)	1,287	1,844	2,000	156	2,078	78
Nuclear Materials Management and Safeguards System (NMMSS)	1,100	1,248	1,284	36	885	-399
Total	12,959	14,471	16,318	1,847	15,142	-1,176
Full-Time Equivalent Employment by Activity						
International Programs	57	61	61	0	61	0
State Programs	31	30	34	4	34	0
DOE/DOD Projects	3	4	4	0	4	0
Nuclear Materials Management and Safeguards System (NMMSS)	0	1	1	0	1	0
Total	91	96	100	4	100	0

International Programs

This activity includes developing and implementing policies and programs on international issues; administering the Commission's responsibilities in the international arena in the areas of nuclear nonproliferation, reactor safety, radiation protection, materials safety, international safeguards and waste management; facilitating NRC access to foreign nuclear health and safety-related information and NRC technical cooperation with foreign countries and international organizations; and maintaining liaison with the Executive Branch, particularly the National Security Council, Department of State, Department of Energy, and Agency for International Development on international matters. This activity ensures that NRC has effective relationships with international organizations and foreign governments. The establishment and maintenance of such relationships contribute to the assurance of U.S. nuclear safety and help support U.S. national security and other U.S. foreign policy objectives.

Commission support for Presidential initiatives in the New Independent States (NIS) of the former Soviet Union and Central and Eastern Europe (CEE) will continue at a high level. Furthermore, international nuclear safety assistance and cooperation is expected to expand in the countries of the Pacific Rim due to the rapid growth in their economies and electric energy sectors. Both of these activities will require substantial expenditures of staff resources resulting in continued pressure on NRC's baseline international program.

On September 20, 1994, the United States signed the International Convention on Nuclear Safety, which imposes significant legal obligations regarding our nuclear safety program. Once the convention is ratified, the Commission will be required to implement major elements including drafting of a national report and participation in review meetings - all of which will require substantial expenditures of staff resources.

The agency will conduct active cooperative international exchanges in nuclear safety and safeguards during FY 1996 with about 32 countries plus Taiwan and international organizations, such as the International Atomic Energy Agency and the Nuclear Energy Agency, including assistance to Russia and Ukraine of the NIS and to CEE. The NRC will also initiate new activities with several countries in the early stages of establishing a nuclear power program that might use U.S. nuclear technology. The Nuclear Safety Attache at the U.S. Mission to UN Systems Organization in Vienna, a position provided by NRC, represents U.S. Government views on nuclear safety and radiation protection issues at the IAEA and with other diplomatic missions in Vienna and helps provide both programmatic and policy oversight of IAEA's nuclear safety program.

Diplomatic initiatives at several Presidential Summits, and most recently in the Gore-Chernomyrdin Commission, will require active NRC participation in an expanded program of nuclear safety assistance and cooperation with the NIS and CEE. NRC provides assistance in the areas of strengthening independent regulatory organizations' infrastructures, and inspections, training, fire protection, incident response, and data collection and analysis activities.

The NRC will also continue to participate as a member of interagency U.S. Physical Protection Review Teams to exchange technical information with representatives of foreign governments on physical protection procedures and practices and to host reciprocal visits to the United States. The NRC will continue to support IAEA-sponsored international safeguards activities concerned with nuclear nonproliferation. The NRC will assist IAEA in inspection activities at selected U.S. nuclear facilities, as required. The NRC will also continue to participate in the management and direction of the Technical Support Coordinating Committee, the U.S. Interagency Action Plan Working Group, and other efforts associated with IAEA safeguards. During FY 1996-1997, the NRC will also continue to assist Russia, Ukraine, Kazakhstan, and Belarus in developing and implementing national systems for accounting and control of nuclear material. The objective of this program is to develop systems of material control and accounting and physical protection that will include a body of regulations, guides, technical review criteria, implementation standards and procedures, and an inspection program.

State Programs

This activity provides for cooperation, training, oversight, technical assistance, and liaison with States, local governments, Indian tribes, and interstate organizations to ensure adequate protection of public health and safety from the hazards associated with the use of radioactive material. This activity will strengthen the Agreement State Program, including developing additional training courses and workshops to provide Agreement State personnel with information on implementing several new initiatives and to obtain comment from the Agreement States on these initiatives. These initiatives will include developing and implementing: 1) a policy statement, which will draw a clear distinction between what is required for both the adequacy and compatibility of an Agreement State Program; and 2) an Integrated Materials Performance Evaluation Program, which will guide a common process to assess the performance of the 29 Agreement States and NRC's regional materials programs. As a part of these responsibilities, the NRC administers agreements with the 29 Agreement States that exercise jurisdiction over the use of radioactive materials; provides assistance to other States seeking Agreement State status; conducts major training courses, special topic workshops, and technical meetings for Agreement State staff; makes periodic visits to review programs for adequacy and compatibility with NRC programs; provides early and substantive involvement of the States in NRC rulemaking and other regulatory efforts; provides assistance to State and local governments in radiation control; and conducts an all-Agreement States annual meeting. The administration and oversight of the Agreement State program ensures there is a coherent, consistent, national program for the regulation of Atomic Energy Act materials that provides adequate levels of safety among all Agreement State and NRC programs. The agency also coordinates activities of interest to

State, local, and Indian tribal governments with other NRC offices; and participates in activities conducted by the Conference of Radiation Control Program Directors, Inc. In addition, the agency negotiates memoranda of understanding with States on various NRC and State activities involving mutual cooperation, monitors State legislation, and informs the Commission and staff of significant State actions concerning nuclear issues. It also regularly consults and conducts meetings with Governor-appointed State liaison officers and maintains contact with national organizations, such as the National Governors' Association, National Association of Regulatory Utility Commissioners, National Congress of American Indians, and National Conference of State Legislatures, to identify NRC regulatory initiatives affecting States and to keep NRC apprised of those organizational activities that could affect the agency.

The NRC also will provide technical assistance to the LLW compacts; State regulatory bodies; and the States of South Carolina and Washington, where the existing LLW disposal sites are located. On request, the NRC will provide technical assistance to Agreement States that are in various stages of developing and implementing plans to regulate new LLW disposal facilities.

This activity also provides for Federal liaison support to increase cooperation and communication between the NRC and other Federal agencies on policy matters. The Federal liaison program manager conveys the Commission's viewpoints and policies to Federal agencies and notifies NRC senior management about significant actions by other Federal agencies that may affect NRC actions, plans, and policies.

Department of Energy\Department of Defense (DOE\DOD) Projects

The NRC will continue to review and comment on proposed DOD and DOE reactor projects and facilities, as requested.

Educational Grants

During FY 1996-1997, the NRC will continue to support research educational grants. Pursuant to sections 31(a) and 141(b) of the Atomic Energy Act of 1954, as amended, the NRC is authorized to award grants and cooperative agreements to educational institutions, nonprofit institutions, State and local governments, and professional societies. The NRC grant program is administered in accordance with the Federal Grant and Cooperative Act of 1977, OMB guidance, and NRC policies and procedures. This program fosters public understanding of nuclear safety, enlarges the body of knowledge and technical information, and enhances the protection of public health and safety. Such support to educational institutions is limited to no more than one percent of the total annual budget for the Office of Nuclear Regulatory Research. At present, NRC grants support a variety of professional meetings and university-based research projects.

Small Business Innovation Research (SBIR)

During FY 1996-1997, the NRC will continue to support the Small Business Innovation Research Program (SBIR), as required by Public Law 97-219, to stimulate technological innovation by small businesses. The law requires that Federal agencies establish SBIR programs if their extramural research budget exceeds $100 million. The NRC has participated in the program since it was established in FY 1982, notwithstanding the fact that the research budget at times has been less than $100 million dollars. The NRC's SBIR Program supports high-quality and cutting-edge research of interest to the NRC. The program also seeks to couple this research with follow-on private funding to pursue commercial applications and to increase technological innovation. Each year, about 110 to 130 SBIR proposals will be reviewed and about 10 to 12 contracts will be awarded.

Nuclear Materials Management and Safeguards System (NMMSS)

During FY 1996-1997, the NRC, in conjunction with DOE, will continue to operate and maintain the Nuclear Materials Management and Safeguards System (NMMSS) to track the movement of domestic and foreign nuclear materials.

INSPECTOR GENERAL PROGRAM

INSPECTOR GENERAL PROGRAM

(Dollar amounts in tables represent thousands of dollars ($K). In text, whole dollar amounts are used. Staff numbers represent full-time equivalents (FTEs).)

Total FY 1996 Estimate $5,500,000

			FY 1996 Estimate		FY 1997 Estimate	
	FY 1994 Enacted	FY 1995 Enacted	Request	Change from FY 1995	Planning Estimate	Change from FY 1996
Budget Authority by Function ($K)						
Salaries and Benefits	3,933	4,192	4,507	315	4,651	144
Contract Support	662	653	751	98	800	49
Travel	205	235	242	7	249	7
Total	4,800	5,080	5,500	420	5,700	200
Full-Time Equivalent Employment						
Audits	19	19	19	0	19	0
Investigations	17	18	18	0	18	0
Inspector General and Resource Management and Operational Support	7	7	7	0	7	0
Total	43	44	44	0	44	0

Changes in Budget Authority ($K)				
	FY 1996 Change from FY 1995			FY 1997 Change from FY 1996
Program	Current Services	Program Requirements	Total	Total
Inspector General	343	77	420	200

EXPLANATION OF RESOURCE CHANGES FOR CURRENT SERVICES

The changes for current services reflects (1) increases in personnel compensation of 2.0 percent general raise plus 1.21 percent locality raise expected in calendar year (CY) 1995, 2.4 percent expected in CY 1996, within-grade increases, and several minor adjustments, such as the varying number of paydays, the increased number of staff in the Federal Employees Retirement System, and the increased cost of benefits; and (2) increases for contract support and travel to reflect inflation estimated at 3.0 percent in FY 1996.

INSPECTOR GENERAL

EXPLANATION OF RESOURCE CHANGES FOR PROGRAM REQUIREMENTS

The resource increase beginning in FY 1996 is primarily required to support additional contract costs for the annual audit of the agency's financial statement.

DESCRIPTION OF PROGRAM

The NRC's Office of Inspector General (OIG) was established in April 1989 to provide the Commission and the Congress with an independent review and appraisal of NRC's programs and operations to ensure their effectiveness and efficiency and to prevent and detect fraud, waste, and abuse. The OIG accomplishes its mission by performing audits, and investigations, and by reviewing existing and proposed legislative and regulatory initiatives.

The NRC and the OIG each have some unique responsibilities in support of the agency's mission. The NRC's primary mission is to provide adequate assurance that public health and safety is protected in the commercial use of nuclear materials and in the operation of nuclear facilities. The OIG, therefore, plays a critical role by assessing and reporting on NRC's efforts to ensure that its safety-related programs are operating effectively.

Similarly, the NRC is responsible for ensuring that individuals who identify nuclear safety concerns regarding the use of nuclear materials do not suffer adverse job actions resulting from such activities. The OIG continually assesses the NRC's efforts to combat this type of unlawful discrimination.

The components within the OIG program are described below.

Audits

The audit program is designed to provide assurance to the Commission and to Congress that NRC programs and operations are working efficiently and effectively. To do this, the OIG audit staff conducts performance and financial audits. Performance audits focus on NRC's administrative and program operations. OIG's financial audits review NRC's internal control systems, transaction processing, and financial systems.

During FY 1996-1997, the OIG will perform 15 to 20 audits each year. Three of these audits are required by statute or OMB. The remaining audits will focus on high-risk, high-cost agency programs that are examined regularly in a multi-year cycle.

The audits planned for FY 1996-1997 are based on a comprehensive annual audit plan that includes input from the NRC Commission, Congress, GAO, OMB, DOE, and the nuclear industry, as well as from OIG staff. The plan identifies key, high-risk, high-cost programs for audit, including NRC's inspection, research, waste management, and information resources management programs. Audit surveys of these areas identify issues that require further examination.

In the financial management area, the audit plan includes several audits needed to meet legislative and OMB requirements. These audits will address various financial management issues, including those mandated by the Chief Financial Officers Act. Furthermore, the NRC is required by the Omnibus Budget Reconciliation Act of 1990 to recover approximately 100 percent of its budget authority. In FY 1996, the NRC will collect approximately $525 million in fees from the industries that it regulates. Therefore, the agency must employ sound financial practices to comply fully with its legislative mandates. The OIG assists the agency in meeting these objectives by conducting financial audits.

Additionally, during FY 1996-1997, the OIG will assess and report on NRC's response to recommendations made by OIG and other audit entities, such as GAO, concerning NRC programs.

Investigations

The Inspector General Act of 1978 requires the OIG to receive and investigate allegations concerning violations of Federal laws and regulations, as well as allegations of mismanagement, waste, and danger to public health and safety. The mission of the investigative program is to perform investigative activities related to the integrity of NRC's programs and operations.

By nature, investigations are primarily reactive. However, OIG periodically performs root cause analyses and conducts other preventive initiatives. The investigative caseload is primarily determined by the number of allegations received and the complexity of the issues raised. On the basis of historical trends, the investigative workload has continually increased in complexity since the inception of the OIG in April 1989. The IG received 420 allegations in FY 1994; 93 investigations were opened and 89 were closed. OIG expects that a similar number of cases will be opened and closed during this planning period. In addition, investigators may also participate, on occasion, as observers in agency task forces that examine ways to strengthen agency operations.

INSPECTOR GENERAL

Inspector General and Resource Management and Operational Support

The Inspector General's staff consists of secretarial support and legal counsel. OIG Counsel provides independent advice on issues concerning criminal law, criminal procedure, evidence, and constitutional law as these relate to OIG's investigative program. Among the other legal responsibilities are appropriations law, financial management statutes and regulations, and procurement and funding rules in support of OIG's auditing program. OIG Counsel furnishes litigation support to the Department of Justice and others as necessary, and advises in matters concerning personnel, labor law, and Privacy Act and Freedom of Information Act issues. OIG Counsel also provides detailed review and comment for existing and proposed legislation, regulations, directives, and policy issues that affect agency programs and operations.

The Resource Management and Operational Support staff provides operational support to the OIG. It formulates and executes the OIG budget, prepares the OIG's semiannual report to the U.S. Congress, operates an independent personnel program, and serves as the liaison and point of contact for activities of the President's Council for Integrity and Efficiency. This staff also provides automated data processing support, security management, space planning, and procurement support to the OIG.

SPECIAL SUPPORTING TABLES

SPECIAL SUPPORTING TABLES

This section contains the following:

Legislative Program Projections which provides a summary of NRC's budget authority and outlays by appropriation for FY 1994-2000.

A report on consulting services, required by 31 U.S.C. 1114(a), which provides resource estimates and a description of the consulting services used by NRC in FY 1994 and planned for FY 1995-1996.

A report on drug testing, required by 31 U.S.C. 1105(a), which describes NRC's drug testing activities conducted in accordance with Executive Order 12564.

A report on metrication, required by Public Law 100-418, which describes NRC's actions that have been taken and those planned for FY 1995 to implement the Metric Conversion Act of 1975, as amended.

A report by the Office of Inspector General on NRC's compliance with, and the effectiveness of, Public Law 101-121 on the use of appropriated funds to influence certain Federal contracting and financial transactions.

A summary of NRC's reimbursable work agreements including the source and amount of funding, a project description, a description of the billing procedures and the extent of full-cost recovery and a justification for NRC's involvement in each project.

LEGISLATIVE PROGRAM PROJECTIONS
(Dollars are in millions)

	FY 1994 ENACTED	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE
NRC Appropriation: Salaries and Expenses							
Budget Authority	530.2	520.5	520.3	504.3	494.0	483.5	473.0
Budget Outlays	541.1	522.6	520.4	508.3	496.6	486.1	475.6
NRC Appropriation: Inspector General							
Budget Authority	4.8	5.1	5.5	5.7	5.7	5.7	5.7
Budget Outlays	4.0	5.0	5.4	5.7	5.7	5.7	5.7

U.S. NUCLEAR REGULATORY COMMISSION
SCHEDULE OF CONSULTING SERVICES BY PROGRAM

Salaries and Expenses, Account No.: 31X0200
Inspector General, Account No.: 31X0300

	(Dollars in Thousands)		
Type of Service/Program	FY 1994 Actual	FY 1995 Estimate	FY 1996 Estimate
Management and Professional Support Services:			
Reactor Program	$45	$14	$16
Management and Support Program	11	0	0
Subtotal	$56	$14	$16
Nuclear Regulatory Commission Salaries and Expenses Account TOTAL	$56	$14	$16
Nuclear Regulatory Commission Office of Inspector General Account	$0	$0	$0
Amounts included in the categories listed above for R&D activities:	$0	$0	$0

Reactor Program

Consultant services are used to provide technical expertise in: 1. developing cost/benefit information and identifying advantages and disadvantages associated with the implementation of risk-based regulations; 2. reviewing design criteria, design specifications, and design reports for mechanical components and piping systems primarily applicable to advanced light water reactors; and 3. analyzing financial qualifications of companies purchasing new reactors or new companies formed to operate power reactors to ensure that licensees' financial situations do not adversely affect the public health and safety.

Management and Support Program

Contractual services were used in the development of a quality child care facility for use by NRC employees. Work on this project has been completed.

FY 1996 CONGRESSIONAL BUDGET REQUEST
REPORT ON NRC'S DRUG TESTING ACTIVITIES

NRC's Drug Testing Plan was approved in August 1988 and all components of NRC's drug testing program for employees and applicants remain in place. Drug testing requirements imposed by NRC upon the nuclear industry through regulations are separate from this program and not covered by this report. NRC's Drug Testing Program under E.O. 12564 includes random, applicant, voluntary, follow-up, reasonable suspicion and accident related drug testing. Testing was initiated for non-bargaining unit employees in November 1988 and for bargaining unit employees in December 1990 after an agreement was negotiated with the National Treasury Employees Union.

NRC positions which meet the following criteria are considered testing designated positions and the employees are subject to random testing:

(1) Regional and Headquarters employees who have unescorted access to vital areas of nuclear plants and Category I fuel facilities;
(2) Employees who have assigned responsibilities or are on call for Regional or Headquarters incident response centers;
(3) Employees who require access to Sensitive Compartmented Information, Foreign Intelligence Information, or who require access to other classified information (e.g., National Security Information or Restricted Data); and

(4) Employees who are motor vehicle operators carrying passengers.

Approximately 1,738 NRC employees occupy testing designated positions and are subject to random testing. Potential selectees interviewed for positions in these categories are subject to applicant testing.

Approximately 960 tests of all types were conducted between January 1, 1994 and December 31, 1994. Since each employee subject to random testing has an equal chance of being selected each time, some NRC employees were randomly tested more than once. All testing results have been negative except for one employee who tested positive. That employee is now undergoing assessment by the NRC's Drug Rehabilitation Assessment Coordinator. Another employee entered into the NRC voluntary referral (safe harbor) program in 1994 and is now undergoing follow-up testing. An employee who tested positive under random testing conducted in 1992 successfully completed follow-up testing in 1994. An employee who tested positive under random testing conducted in 1993 completed follow-up testing in 1994 and is now subject to random testing.

Special Supporting Tables: Report on NRC's Drug Testing Activities

Internal quality control reviews were completed during the past year to ensure NRC's program continues to be administered in a fair, confidential and effective manner.

NRC's Drug Testing Program remains firmly based upon the principles and guidance provided through E.O. 12564, Public Law 100-71, Department of Health and Human Services guidelines and Commission decisions.

U. S. NUCLEAR REGULATORY COMMISSION
REPORT TO CONGRESS ON METRICATION

This report is in response to Public Law 100-418, Section 5164 of the Omnibus Trade and Competitiveness Act of 1988, which requires each Federal Government agency to report to the Congress on its metrication activities for the preceding year and plans for the coming year.

Specific Nuclear Regulatory Commission (NRC) actions in FY 1994 included the following. In February 1994, the NRC's Metric Executive responded to the Survey of Metric Usage in Agency Procurements from the Procurement and Supply Subcommittee of the Metrication Operating Committee. In April 1994, the Commission responded to a letter from Senator Claiborne Pell and Congressman George E. Brown, Jr., requesting information on the NRC's metrication activities.

Further, the NRC's Metrication Oversight Committee has been meeting to assess the state of metric use by the licensed nuclear industry in the United States to determine whether modifications to the NRC's metrication policy should be recommended to the Commission. In 1995, the NRC staff will recommend that the Commission publish in the Federal Register for comment information relating to the extent to which the NRC licensees are using metric units. Comments received will be used by the staff in determining its recommendation to the Commission on whether to modify the NRC's metrication policy.

Through the above, the NRC will continue to achieve its metrication objectives for 1995.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555

July 19, 1994

OFFICE OF THE
INSPECTOR GENERAL

MEMORANDUM FOR: The Chairman
Commissioner Rogers
Commissioner de Planque

David C. Williams

FROM: David C. Williams
Inspector General

SUBJECT: THE NUCLEAR REGULATORY COMMISSION'S COMPLIANCE WITH THE ANTI-LOBBYING ACT; SECTION 319 OF PUBLIC LAW 101-121.

In accordance with Public Law 101-121's requirement for an annual report to Congress, we submit our findings in regard to the U.S. Nuclear Regulatory Commission's (NRC) compliance with the requirements of the Anti-Lobbying Act, and the effectiveness of those requirements.

In order to assess NRC's compliance with the Act, we reviewed 18 of the 56 fiscal year to date contract actions over $100,000 to determine if the required clause and certification were included, where applicable.

During our review, we found the agency was generally in compliance with the requirements of the Anti-Lobbying Act. In our sample, we noted there was one instance where the required certification was not included.

In a previous review, this office recommended an item be added to the contract specialists'[1] checklist to prompt the inclusion of the anti-lobbying clause and certification, where applicable. This addition to the checklist has been made and in most instances is producing the desired result. We found the checklist in the contract file which contained the error. The contract specialist had made use of the checklist, as evidenced by the checked off items on the list. However, the section containing the references to the anti-lobbying requirements had not been marked. The contract specialist attributed this to an oversight.

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[1] Contract Specialist is the title of the new position within DCPM for staff who were formerly either Contract Administrators or Contract Negotiators. They may now perform either or both functions.

Additionally, the Act requires statistics on the following:

- o All alleged violations, during the year covered by this report, which relate to the following NRC actions:
    1) the awarding of any Federal contract;
    2) the making of any Federal grant;
    3) the making of any Federal loan;
    4) the entering into of any cooperative agreement;
    5) the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
- o The actions taken by the Chairman, in the year covered by this report, with respect to those alleged violations and alleged violations in previous years.
- o The amounts of civil penalties imposed by NRC.

There have been no alleged violations related to NRC's covered Federal Actions therefore, no action was required by the Chairman and no penalty was imposed by NRC.

This report is to be submitted with NRC's 1996 budget.

cc: J. Taylor, EDO
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SUMMARY OF REIMBURSABLE WORK AGREEMENTS
(new budget authority)

	FY 1994	FY 1995
International Agreements		
Cooperative Threat Reduction	$897,470	$982,000
Foreign Cooperative Research Agreements	0	$10,300,000
Nuclear Safety Initiatives for the New Independent States	$5,500,000	$5,500,000
Philippine Witness Agreement	$4,000	0
Regional Energy Efficiency Project	$1,500,000	$1,500,000
Administrative Agreements		
Criminal History Program	0	$1,240,000
Criminal Investigator Academy	$13,110	$24,000
Information Access Authorization Program	0	$5,000
Material Access Authorization Program	0	$5,000
NRC Building Consolidation	$569,000	0
Other Agreements		
DOE Radiation Exposure Monitoring System	$200,000	$400,000
TOTAL	$8,683,580	$19,956,000

SUMMARY OF REIMBURSABLE WORK AGREEMENTS

1. **Cooperative Threat Reduction.**

Source: Defense Nuclear Agency (DNA)

Description of Work: The NRC will assist Russia, Ukraine, and Kazakhstan in the development and implementation of nuclear regulatory capability as part of the U.S. Cooperative Threat Reduction (CTR) Program. NRC will evaluate these countries Material Control and Accounting (MC&A) and Physical Protection (P/P) programs and assess needs for assistance in systems development, design, installation, implementation and follow-on user training.

Justification for NRC Involvement: Under the auspices of the CTR Program for former Soviet nuclear weapons and materials, the NRC and the Department of Energy have established bilateral technical assistance programs with these countries in the areas of MC&A and P/P. The objective of the U.S. assistance is to help these countries improve their capabilities to effectively safeguard nuclear facilities and materials. This project is being conducted under funds authorized by Congress in the Soviet Nuclear Threat Reduction Act of 1991 (Nunn-Lugar) and successor legislation such as the Freedom Support Act of 1992.

Reimbursement Procedures: DNA issues an Interagency Cost Reimbursable Order (IACRO). The IACRO funds the NRC to perform efforts agreed to by the Interagency Coordinating Group. The IACRO is entered into pursuant to the authority of the Economy Act of 1932, as amended (31 USC 1535) and adheres to Federal Acquisition Regulation (FAR) 6.002 and other applicable Federal Laws and Regulations. Reimbursement Vouchers (SF 1080) are submitted to DNA.

2. **Foreign Cooperative Research Agreements (FCRA).**

Source: Various foreign entities

Description of Work: The NRC enters into nuclear safety cooperative research agreements with foreign entities under the NRC's Foreign Cooperative Nuclear Safety Research Program for the purpose of exchanging nuclear safety-related information, conducting joint projects of mutual interest, and interacting with other organizations concerned with nuclear safety. The research programs subject to these cooperative research agreements are carried out as a part of the agency's nuclear regulatory responsibilities. The foreign entities participating in the Cooperative Nuclear Safety Research Program enter into cooperative research agreements that provide in-kind technical or financial contributions to the NRC.

Justification for NRC Involvement: These foreign contributions are provided to the NRC in return for access to information which has been developed and continues to arise from the NRC research programs before final publication and release to the public domain. These contributions support broad safety research programs and also allow the foreign entity direct participation in the execution of the research program. Both parties benefit from the cooperative efforts. The NRC is authorized by its annual appropriation legislation to receive, retain, and use funds under the Cooperative Nuclear Safety Research Program for those activities associated with the program.

Reimbursement Procedures: The foreign entity provides an advance of funds to the NRC using the Fedwire Deposit System (i.e., electronic funds transfer) or by check/money order.

3. **Nuclear Safety Initiatives for the New Independent States (NIS): Energy Efficiency and Market Reform Project.**

Source: U.S. Agency for International Development (AID)

Description of Work: The purpose of this AID initiative is to continue to implement nuclear safety initiatives in Russia and Ukraine. Activities under this agreement include: (1) analytical support activities; (2) development of a training center for regulatory personnel; (3) creation of an incident response center; (4) work in the technical area of probabilistic risk assessment; and (5) assistance in legal enforcement and development of draft regulatory legislation. Expected FY 1995 funding will also provide for assistance to Armenia and Kazakhstan.

Justification for NRC Involvement: The NRC is assisting AID in providing support to the NIS in the area of nuclear safety due to NRC's specialized expertise in the regulation of civilian uses of nuclear energy and materials.

Reimbursement Procedures: AID provides budget authority in advance to the NRC for expenses for travel, contractor support, and administrative expenses (e.g. interpreters). Salary costs for NRC employees working under this agreement are not reimbursed by AID.

4. **Philippine Witness Agreement.**

Source: Philippine Government

Description of Work: An NRC employee provided information needed during litigation held in the Philippines, based upon his prior work assignment with the International Atomic Energy Agency.

Justification for NRC Involvement: The NRC assisted the Philippine government due to our specialized expertise in this area.

Reimbursement Procedures: Attorneys representing the Philippine Government provided a check in advance of the work being performed.

5. **Regional Energy Efficiency Project.**

Source: U.S. Agency for International Development (AID)

Description of Work: The purpose of this AID initiative is to promote the efficient and environmentally sound use of energy in the countries of Eastern and Central Europe. Technical (nuclear safety) subject areas include: Temelin review, international code assessment, severe accident and risk and accident management, nuclear safety orientation and training which includes conducting legal, regulatory, and inspector training, hosting nuclear specialists, training at NRC's Technical Training Center in Chattanooga, Tennessee as well as supporting membership in the International Piping Integrity Research Group.

Justification for NRC Involvement: NRC is assisting AID in providing support to the countries of Eastern and Central Europe in the area of nuclear safety due to NRC's specialized expertise in the regulation of civilian uses of nuclear energy and materials.

Reimbursement Procedures: AID provides budget authority in advance to the NRC for expenses for travel, contractor support, and administrative expenses (e.g. interpreters). Salary costs for NRC employees working under this agreement are not reimbursed by AID.

As costs are incurred by the NRC, a receivable is created in the NRC accounting system and bills are issued to AID in accordance with the terms of the agreement. Upon collection of all costs incurred under the agreement and the deobligation of any uncosted obligations, any remaining unobligated allotment balance will be withdrawn by NRC.

6. **Criminal History Program (CHP).**

Source: NRC licensees

Description of Work: The NRC has entered into a written agreement with the FBI's Identification/Information Management Division to conduct non-criminal justice fingerprint card name checks for which the FBI provides responses for determining if criminal history records for applicants exist in FBI files and/or data bases.

Justification for NRC Involvement: The Atomic Energy Act (AEA) of 1954, as amended, provides NRC the authority to require each licensee or applicant for a license to operate utilization facilities to fingerprint each individual who is granted unescorted access to nuclear power facilities (NRC licensees) or access to safeguards information to undergo an FBI criminal history fingerprint check.

Reimbursement Procedures: Funds are received from the licensees for fingerprint checks. Payments are made to the FBI via the Department of Treasury's On-Line Payment and Collection (OPAC) system. Salary costs for NRC employee administering this program are not reimbursed by the licensees.

7. **Criminal Investigator Academy.**

Source: Department of State, Department of Housing and Urban Development

Description of Work: Provide one clerical employee in support of the training objectives of the Inspector General Criminal Investigator Academy, Federal Law Enforcement Training Center.

Justification for NRC Involvement: Section 601 of the Economy Act of June 30, 1992, as amended 31 U.S.C. 1535 and 1536. Government Employees Training Act [5 U.S.C., Sec. 4103(a)].

Reimbursement Procedures: Payments are made via the Department of Treasury's On-Line Payment and Collection (OPAC) system.

8. **Information Access Authorization Program (IAAP).**

Source: NRC licensees

Description of Work: Licensee personnel with access to classified national security information and restricted data are subject to personnel screening by the NRC and the Office of Personnel Management to ensure their eligibility for such access. This screening is necessary to reduce the risk of misuse of such information.

Justification for NRC Involvement: Title 10 of the Code of Federal Regulations, Part 25, issued under the authority of the Atomic Energy Act (AEA) to protect the public health and safety and provide for common defense and security.

Reimbursement Procedures: Funds are received from the licensees for background investigations. Payments are made to OPM via the Department of Treasury's On-Line Payment and Collection (OPAC) system. Salary costs for NRC employees administering this program are not reimbursed by the licensees.

9. **Material Access Authorization Program (MAAP).**

Source: NRC Licensees

Description of Work: Licensee personnel with access to or control of any special nuclear material are subject to personnel screening by the NRC and the Office of Personnel Management (OPM) to ensure their eligibility for such access. Such screening is necessary to reclaim the risk of misuse of nuclear materials.

Justification for NRC Involvement: Title 10, Code of Federal Regulations, Part 11, issued under the authority of the Atomic Energy Act (AEA) to protect the public health and safety and the common defense and security.

Reimbursement Procedures: Funds are received from the licensees for background investigations. Payments are made to OPM via the Department of Treasury's On-Line Payment and Collection (OPAC) system. Salary costs for NRC employees administering this program are not reimbursed by the licensees.

10. **NRC Building Consolidation.**

Source: General Services Administration

Description of Work: GSA transferred these funds to NRC to cover move costs associated with relocation of NRC's thousand plus employees from the six leased locations in the Bethesda/Rockville area to Two White Flint North, 11555 Rockville Pike, Bethesda, Maryland, during the second and third quarter of FY 1994.

Justification for NRC Involvement: The funds provided allowed NRC to expedite the award of several moving contracts for office, computer and reproduction equipment, materials, and supplies. To achieve consolidation in a timely manner, NRC performed daily oversight, administration, and coordination of moving related services to accomplish the completion of NRC's headquarters consolidation.

Reimbursement Procedures: Funds were transferred to NRC per the reimbursable agreement of April 6, 1994, between GSA and NRC. Payments were made to NRC via the Department of Treasury's On-Line Payment and Collection (OPAC) System.

11. **Radiation Exposure Monitoring System.**

Source: Department of Energy

Description of Work: The purpose of this effort is to assist the DOE Office of Health Physics and Industrial Hygiene in (1) the development and implementation of health surveillance support systems that will collect, maintain, and report radiation exposures; (2) the innovative application of lessons learned from related experiences; and (3) the sharing and transfer of technology currently used by the NRC to support DOE's programs.

Justification for NRC Involvement: DOE has initiated work to enhance the support systems for health surveillance of DOE employees, DOE contractors, and visitors to DOE facilities. The first step in this effort was to evaluate their Radiation Exposure Monitoring System (REMS) that is used to collect, maintain, and report personnel radiation exposures. A contractor was selected to conduct this evaluation to take advantage of their research and lessons learned while developing, operating, and maintaining the NRC Radiation Exposure Information System, which has a similar function.

Reimbursement Procedures:

As costs are incurred by the NRC, a receivable is created in the NRC accounting system and bills are issued to the ordering agency in accordance with the terms of the agreement. Upon collection of all costs incurred under the agreement and the deobligation of any uncosted obligations, any remaining unobligated allotment balance will be withdrawn by the NRC.

NRC FORM 335
(2-89)
NRCM 1102,
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U.S. NUCLEAR REGULATORY COMMISSION

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Division of Budget and Analysis
Office of the Controller
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

10. SUPPLEMENTARY NOTES

11. ABSTRACT *(200 words or less)*

This report contains the fiscal year budget justification to Congress. The budget provides estimates for salaries and expenses and for the Office of the Inspector General for fiscal years 1996 and 1997.

12. KEY WORDS/DESCRIPTORS *(List words or phrases that will assist researchers in locating the report.)*

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NRC FORM 335 (2-89)

FRIDAY, MARCH 3, 1995.

FEDERAL ENERGY REGULATORY COMMISSION

WITNESS

ELIZABETH A. MOLER, CHAIR

Mr. MYERS. Chairman Moler, if you will please take your seat.

Ms. MOLER. Good morning.

Mr. MYERS. We are pleased to have Elizabeth Moler here with the Federal Energy Regulatory Commission. You are going to be the only witness. Your prepared statement will be placed in the record and you may summarize or proceed as you care.

OVERVIEW

Ms. MOLER. Thank you very much, Mr. Chairman. It is indeed a pleasure to appear before you and your colleagues today to present the fiscal year 1996 budget for the Federal Energy Regulatory Commission. The Commission's total funding requirement for fiscal year 1996 is $151.6 million.

This is a 9 percent reduction from our fiscal year 1995 appropriation. This reduction reflects our commitment to reducing spending by cutting administrative costs and simplifying regulations where appropriate. We are doing more with fewer people.

Over the past two years, the Commission has substantially upgraded its management systems. We are now in compliance with the Chief Financial Officer's Act of 1990, one of the few agencies in town to be in compliance.

Our auditors, KPMG Peat Marwick, recently gave us a clean bill of health by issuing an unqualified opinion on our fiscal year 1994 financial statements. This represents a marked improvement over our previous audits. To me, that is important news. It means that our management systems are working, and it means that we are using the funds entrusted to us responsibly.

NATURAL GAS

Let me now highlight briefly what we are doing in each of our major program areas. Let me start with natural gas, where we oversee more than 130 interstate pipelines. Natural gas supplies almost a quarter of the Nation's energy needs.

For several years the Commission has followed a policy of letting competition work where it can in the natural gas industry, while retaining more traditional forms of regulation where needed. This has led to an industry that is remarkably different than the industry we knew just a few years ago.

In 1992, the Commission issued Order Number 636, which began the final phase of restructuring the natural gas industry. Order 636 required pipelines to restructure their services to bring the benefits of competition at the wellhead to consumers. The order allowed the pipelines to recover prudently incurred transition costs attributable to complying with the rule.

We now have enough experience with Order 636 to judge the success of it. Put simply, it works. The order has benefited all the major sectors of the industry. The benefits of the rule clearly outweigh the costs of the transition.

The natural gas system is more flexible than ever before, and more reliable. Curtailments, I am pleased to say, are a thing of the past. Last year, we saw the coldest winter in 100 years. The interstate grid proved fully able to meet customer obligations. That is a far cry from the recurring emergencies we used to have.

Perhaps most important, Order 636 lays a solid foundation for the future. Within the basic Order 636 structure, both the Commission and the industry will be looking for ways to make further improvements.

For instance, under Order 636, we began a new program enabling those who have rights to pipeline capacity to release those rights temporarily or permanently. The program makes better, more efficient use of the pipeline system. Many shippers now use this capacity release program to both buy and sell capacity. We are now looking at the program to make sure, to see if there are ways we can make it work even better.

Just last month the Commission began a major new inquiry into alternatives to traditional cost-of-service regulation for pipelines. Our philosophy is simple: Where competition exists, it can do a better job of regulating than we can. We will allow pipelines to use market-based rates if their markets are competitive. In the absence of competition, we are also interested in developing incentive or performance-based approaches to encourage more efficient uses of the pipeline system.

We are also looking at how we set rates for new pipeline construction. We expect to issue a policy statement on this issue soon.

ELECTRIC POWER

Let me now turn to electric policy issues. A little over two years ago, Congress passed the Energy Policy Act of 1992. The Energy Policy Act has already proven to be a very significant factor in an industry undergoing revolutionary changes.

The changes are not being driven by the Commission. They are being driven by changing marketplace economics. A simple example will show what is happening. Entrepreneurs can now build and run new generating plants for as little as 3 to 4 cents per kilowatt hour. At the same time, many utilities' existing plants cost anywhere from 6 to 15 cents per kilowatt hour to run. These older plants are simply not competitive in today's markets.

Throughout the country, customers are demanding access to the lower cost generators, and that means access to the transmission grid. The Energy Policy Act recognized the importance of access to the utilities' wires for others.

As regulators, we must craft new rules that make sense in this new environment. We certainly want to encourage new, low-cost power generators. They offer huge savings to electricity customers and, by lowering energy costs, will help make Americans able to compete in the world economy. At the same time, however, we must make sure that our utilities remain financially sound. Balancing these two objectives is not easy. It taxes the creativity in all of us.

As the industry evolves, our policies on transmission access are evolving as well. We are pursuing a policy of requiring open transmission access to promote competition for both wholesale sellers and customers. During the past year we have developed comparability, a golden rule for transmitting utilities—do unto others as you do for yourself.

The Commission expects to define this comparability requirement in greater detail in a generic rulemaking in the near future. We will propose to apply comparability and open access requirements for all utilities subject to our jurisdiction.

In doing so, we will certainly carefully consider the views of all segments of the industry as we formulate our final rules, and we will not compromise the reliability of the Nation's electric supply.

Competition in the wholesale market is inevitable. Indeed, it is here now. And it will be good for consumers. Just as we found in restructuring the natural gas industry, however, the utilities we regulate will incur costs in the transition to a more competitive industry.

Utilities that were obligated to invest to meet customers' needs in a different, noncompetitive world see the very real possibility of losing much of the value of their investments. That is the stranded cost problem. The costs are real. Investments have been made and plants have been built. Utilities deserve a fair opportunity to recover their prudently incurred costs during this transition period.

We are now analyzing comments that we received that were made in response to an earlier notice of proposed rulemaking on stranded costs. We believe that transition costs must be addressed from the start, not put off until later in this transition of the electric industry. Thus, let me assure you that our requirements on open access will be coupled with a mechanism for resolving stranded cost issues.

The changes in the electric power industry will require that we examine some very difficult jurisdictional issues under the Federal Power Act. We will work closely with the States in examining these jurisdictional issues. We must resolve these issues in a way that helps rather than hinders the growth of competition.

HYDROPOWER

Finally, let me turn to our hydropower program where we regulate more than 1,600 projects that produce about 48 percent of all the Nation's renewable energy.

The biggest issue here is the relicensing of 157 projects whose licenses expired in December 1993. We have worked very hard to handle this huge bulge of caseload as quickly and as conscientiously as possible. I am pleased to tell you that we have issued 66 licenses in these cases. We anticipate that we will finish the vast majority of the remaining cases by the end of 1995.

I cannot discuss our hydropower program, however, without mentioning last year's *Jefferson County* Supreme Court decision. That decision shifts broad authority from the Commission under the Federal Power Act to the States under the Clean Water Act.

The decision turns water quality standards into water quantity standards. States may now veto hydropower projects that the Commission has determined to be beneficial under the Federal Power Act.

Clearly, States should be able to prevent the discharge of pollutants into their waters. That is, they should have control over issues that relate purely to water quality. The Jefferson County decision, however, goes well beyond that. I believe that Congress ultimately will need to legislate if it wishes to restore the Commission's ability to make the decisions needed to foster the comprehensive development of our Nation's waterways as required by the Federal Power Act.

This concludes my prepared statement, Mr. Chairman. I will certainly be happy to answer any questions you may have.

BUDGET REDUCTION

Mr. MYERS. Well, thank you, Madam Chair, for your very fine testimony here. You are to be complimented on requesting less money this year than last. Several have done it, but I think your reduction is more significant than many. How have you done that?

Ms. MOLER. Well, it has not been easy. We have undertaken a comprehensive evaluation of the way we do business. We have cut staff, we have also looked at our overhead, and we have changed the way we allocate money for projects. We are just running a tighter ship.

Mr. MYERS. How many FTEs have you reduced in the past two years?

Ms. MOLER. Twenty-three.

Mr. MYERS. Twenty-three.

[The following information was provided for the record:]

The correct number is 29, not 23. The Commission's FY 1996 request for 1,453 FTEs is a decrease of 29 from its FY 1994 ceiling of 1,482.

Ms. MOLER. We are a small agency. That is trivial in the context of some of the larger cabinet level departments, but for us it is a big deal.

CARRYOVER OF UNOBLIGATED BALANCES

Mr. MYERS. I guess part of the answer is the fact that you had a carryover of about $31 million, do you not, into next year?

Ms. MOLER. Yes, sir, we do.

Mr. MYERS. Can you explain why that happened?

Ms. MOLER. We have been looking, as I just alluded to, at how we do our contracting. We have also taken a sharp pencil to the amount of money that we have allocated to contractors that have not been paid, that has not actually been used, for example, and we know precisely how many dollars that we have paid to contractors that we have not used, and we are now using those leftover dollars, if you will, to fund some of our contracting for the current year.

I also imposed a hiring freeze when I became chair of the commission approximately two years ago, and we undertook a comprehensive analysis of where we could cut people. The result of that hiring freeze for virtually a year was many dollars saved in personnel. We are being more careful with travel. There is just a variety of circumstances where we have just cut back on the way we spend the taxpayers' dollars.

We have approximately a $31 million carryover. When we looked at our fiscal year 1996 budget proposal, we were absolutely certain that we would have a $15 million carryover, and we proposed to apply that $15 million for fiscal year 1996. The $31 million carryover is really our estimate of where we will be, and we are intending to use that carryover, if it turns out to be the case, for the next two fiscal years.

CASELOAD

Mr. MYERS. You mentioned the caseload in the licensing of hydro that should be caught up by the end of the year. I remember—I think about the time you came in here—you had a tremendous backlog on caseload, not only hydro but some of the other licensing as well. Is that typical? Besides the hydro, is there any other caseload backlog right now?

Ms. MOLER. Well, it is inevitable that we will have some backlog, but the hydro caseload came about as an accident of history, if you will, because of when the Federal Power Act was enacted and when the Commission began to license projects, they just did them all for 50 years, and that 50 years was up in December of 1993, so it is really a blip.

We have made substantial progress. We will have the vast majority of the cases done by the end of the year. The ones that we will not be able to complete this year, however, involve very complex analysis under NEPA, and extensive environmental assessments or in many cases multiproject environmental impact statements, and until we complete those which are, of course, required by law, we won't be able to act on new licensing.

REGULATORY MORATORIUM IMPACT

Mr. MYERS. Congress is presently working on regulation reform. What impact will those rules and changes, if they should be enacted, have on FERC?

Ms. MOLER. We have done an analysis of the rules both in progress and coming attractions that would be affected by the regulatory reform moratorium. I will be happy to submit the complete analysis for the record. It has what Chairman Selin announced was a perverse effect in our case as well. We have a major initiative under way to lessen the reporting requirements and other regulatory requirements for natural gas pipelines.

We issued a notice of proposed rulemaking that would cut back substantially our regulations of natural gas in December. It would be a victim, if you will, of this regulatory moratorium. We are also working on a notice of proposed rulemaking on transmission access, as I discussed in my prepared testimony.

It is a major undertaking that will help the wholesale electric supply business become much more competitive. I believe in something that most of the advocates of the regulatory moratorium would support, more competition in this industry, but it, too, would be put on ice as a result of the regulatory moratorium.

[The information follows:]

REGULATORY MORATORIUM IMPACT

The enactment of regulatory moratorium legislation would have a very negative impact on several initiatives that the Federal Energy Regulatory Commission is undertaking. These initiatives are widely supported by the industries regulated by the Commission. In particular, the moratorium would affect the Commission's efforts to foster a competitive electric power industry. The Commission has announced that it will undertake a generic rulemaking that will define terms and conditions of open-access for electric utility transmission services. The legislation would also impact a final rule on electric utility assets that may be stranded as a result of the transition to competition. This rulemaking is essential, with billions of investors' dollars at stake.

The legislation would also affect the natural gas and hydroelectric program areas. The Commission has proposed a major overhaul of reporting and filing requirements for natural gas companies. This overhaul would eliminate the filing of unnecessary data, and would streamline the regulatory process. In addition, the moratorium threatens the streamlining of assessment of annual charges for hydropower projects.

In summary, generic rulemakings have been and will continue to play an important part of the Commission's mission to ensure that needed regulatory reforms are efficiently accomplished and fairly applied.

I am providing for the record a copy of the February 22, 1995 letter which I sent to Chairman William F. Clinger, Jr. of the House Government Reform and Oversight Committee summarizing my concerns and including a list of proposed and issued Commission rulemakings that would be affected by the moratorium.

FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON, DC 20426

OFFICE OF THE CHAIR

February 22, 1995

The Honorable William F. Clinger, Jr.
Chairman
Committee on Government Reform and Oversight
House of Representatives
Washington, D.C. 20515

Dear Mr. Chairman:

I am writing to comment on the impact the pending regulatory moratorium legislation would have on the ability of the Federal Energy Regulatory Commission to carry out our statutory responsibilities. I am enclosing a list of rulemakings proposed and issued by the Commission that would be affected by H.R. 450 or S. 219, the pending companion regulatory moratorium legislation. The legislation would have a very negative impact on several widely supported initiatives we are undertaking.

Of particular interest is the effect the moratorium proposals would have on the Commission's efforts to foster competition in the electric power industry. We have announced we will undertake a generic rulemaking that will define the terms and conditions under which utilities will be required to provide open access to wholesale transmission service. This initiative will encourage competition by providing industry participants and customers with a clear and uniformly applied statement of the rules for open access. The legislation would also impact the Commission's efforts to finalize a rule dealing with utility assets that are stranded as a result of the transition to competition. This rulemaking is absolutely essential to that transition. Without it, the electric industry and the many individuals who hold a financial stake in it, will, face substantial financial risk. Billions of investors dollars are at stake.

The proposed moratorium would affect Commission actions in the natural gas and hydroelectric areas as well. The Commission has proposed a major overhaul of regulations governing natural gas company filing and reporting requirements. This rule eliminates unnecessary data and streamlines the regulatory process. Moreover, the moratorium threatens the Commission's efforts to modernize the assessment of annual charges for hydropower projects. Many of your colleagues have urged expeditious Commission action on this proposal.

These are only a few examples of the kinds of Commission actions that would be halted or delayed under the provisions of the pending moratorium proposals. The enclosed compilation provides more details on these and other affected rulemakings.

In general, the Commission is committed to streamlining our regulatory processes and revising our traditional regulatory methods to maximize the role of competition wherever possible. Generic rulemakings have been and will continue to play an important part of our efforts to ensure that needed regulatory reforms are efficiently accomplished and fairly applied. These regulatory initiatives have broad support and have benefitted consumers of energy. We hope to continue these efforts.

With best wishes,

Sincerely,

Elizabeth A. Moler

Elizabeth A. Moler
Chair

Enclosure

Impact of Regulatory Moratorium Legislation on Federal Energy Regulatory Commission Initiatives

I. Electric Program

A. Rulemakings on OMB's List

1. Streamlining of Regulations Pertaining to Federal Power Act and Public Utility Regulatory Policies Act, Docket No. RM92-12, 60 Fed. Reg. 4831 (1/25/95), III FERC Stats. & Regs. ¶ 31,___ (1/13/95)

(Item 100 of page 11 of OMB's list of 330 documents)

This rule revises and streamlines the Commission's regulations in a number of different areas. It reduces the filing burdens imposed on utilities when they seek authorization to issue securities. It also revises the filing requirements for utilities that file for smaller rate increases, to ensure the Commission has adequate information from the beginning without having to request additional, supplemental information; this allows a faster decision on whether a proposed rate change should be accepted. The rule further streamlines the certification process for cogenerators and small power producers by, for example, improving the self-certification process, and providing for pre-approved Commission certification in certain circumstances. It additionally provides for reducing the reporting burden associated with electricity shortages.

Impact of moratorium: A moratorium, would sacrifice the various streamlining and burden-reducing changes adopted by the rule.

2. Electronic Filing of FERC Form No. 1, Docket No. RM93-20, 60 Fed. Reg. 1716 (1/5/95)

(Item 278 of page 29 of OMB's list of 330 documents)

This rule provides for the filing on computer diskette of FERC Form No. 1 -- an annual report containing financial and operational data. The FERC Form No. 1 provides information critical to the Commission's oversight of utility rate filings. Electronic submission of these data will allow more timely and better data analysis.

Impact of moratorium: A moratorium would adversely affect the Commission's ability to make effective use of the data in determining whether utility rates are appropriate. It would delay decisionmaking in these matters.

B. Pending Rulemakings Not on OMB's List

1. Stranded Cost Recovery NOPR, Docket No. RM94-7, 59 Fed. Reg. 35,274 (7/11/94) -- comments received 12/9/94 & 1/23/95

Alternative Power Pool Inquiry NOI, Docket No. RM94-20, 59 Fed. Reg. 54,851 (11/2/94) -- comments due 3/2/95 & 4/3/95

The utility industry is now moving from a regulated, non-competitive environment toward a market-driven, competitive bulk power market. The former proceeding proposes rate recovery of utility costs that were prudently incurred under the old regulatory regime, but that might not be recoverable in a competitive regime. It also addresses how to harmonize recovery of stranded costs at the federal level with recovery of stranded costs at the state level. Comments in the rulemaking suggest these stranded costs could amount to billions of dollars. Potential stranded costs could exceed the book value of many utilities' equity if the states implement programs allowing customers to choose their own electricity supplies (known as "retail wheeling"). The latter proceeding investigates how the utility industry's structure and operations -- and consequent regulation -- may need to change with increasing competition. Both proceedings, and particularly the former, have engendered much utility industry support.

Impact of moratorium: A moratorium could severely hamper the transition toward competition.

2. Open Access Transmission Tariffs and Comparability of Transmission Service NOPR

The utility industry is in the middle of a transition to a competitive bulk power market environment where wholesale power suppliers will be able to compete freely to serve customers' needs. To enable this to take place, readily available access to transmission systems to move the power from generating plants to customers is critical. To date the Commission has acted on a case by case basis. However, the Chair and the Commissioners have stated publicly that they are considered acting on a generic basis to make transmission available to meet the needs of both power suppliers and customers and at the same time resolve stranded costs. To act generically, the Commission would need to issue a NOPR.

Impact of moratorium: A moratorium on such a NOPR would create a substantial barrier to the utility industry's movement toward competitive wholesale markets, and would cause regulatory uncertainty and risk to the industry. Increased competition will lower electric rates to consumers.

3. Transmission Pricing Policy Statement, Docket No. RM93-19, 59 Fed. Reg. 55,031 (11/3/94) -- request for rehearing filed 11/23/94

The policy statement allows utilities to file for transmission rates using new, innovative methodologies and approaches that have not been permitted in prior years. It was viewed favorably by the utility industry.

Impact of moratorium: A moratorium could restrict utilities' ability to propose new and innovative ways of pricing transmission.

4. Emissions Allowances Policy Statement and Interim Rule, Docket No. PL95-1, 59 Fed. Reg. 65,930 (12/22/94)

This policy statement and interim rule specifies the ratemaking treatment of emissions allowances (issued pursuant to the Clean Air Act Amendments of 1990) in wholesale transactions and filing requirements to be followed in the recovery of such costs. It was issued at the request of the Edison Electric Institute, and it largely adopts EEI's proposed ratemaking treatment.

Impact of moratorium: A moratorium would create great uncertainty in the utility industry, and could severely hamper the sale or trading of emissions allowances. It would thus undercut reliance on and the effectiveness of market forces to reduce air pollution.

5. Nuclear Plant Decommissioning Trust Fund NOPR, Docket No. RM94-14, 59 Fed. Reg. 28,297 (6/1/94) -- comments received 8/1/94

This proceeding proposed various options for investing nuclear plant decommissioning trust fund monies, including options that allowed investing in a wider range of investments. Both the utility industry and the securities industry have advocated allowing the use of a wider range of investment.

Impact of moratorium: A moratorium would continue the use of only more limited and potentially lower yielding investments.

II. Natural Gas and Oil Pipelines Program

A. Rulemakings on OMB's List

1. Vol I, No. 162, 59 FR 65707, Standards of Conduct and Reporting Requirements for Transportation and Affiliate Transactions, Docket No. RM94-6-002, Order No. 566-B, Order Denying Rehearing

The order denied requests for reconsideration of a Commission final rule revising regulations governing the way in which interstate natural gas pipelines interact with their marketing affiliates. The final rule became effective prior to November 9, 1994.

Impact of Moratorium

Because the order makes no change in the final rule, the moratorium would have little effect other than to delay the ability of the petitioners to seek judicial review of the Commission's denial of their request for rehearing.

2. Vol I, No. 552, 59 FR 59137, Cost-of-Service Reporting and Filing Requirements for Oil Pipelines, Docket No. RM94-2-000, Final Rule

This final rule requires oil pipelines to file certain information concerning their costs and filing requirements for oil pipelines seeking cost-based rates. The rule is a companion to the Commission's 1993 final rule carrying out the mandate of the Energy Policy Act of 1992 that the Commission establish a simplified and generally acceptable ratemaking methodology for oil pipelines. In that rule, the Commission established ceilings on oil pipeline rates based on an index tracking industry wide cost changes. The Commission also permitted an individual oil pipeline to seek an exception to indexing if it could show that it would underrecover its costs.

Impact of Moratorium

The moratorium would probably prevent appropriate rules from being in place for cost-of-service rate filings. Further, potential intervenors/objectors to oil pipeline indexed rate filings would not have information on which to determine whether to protest or otherwise challenge an oil pipeline's rate filing. The burden of continuous Commission staff review of pipeline rates on a cost-of-service basis, with no format for information to be supplied, would be extensive for all cost-of-service rate filings.

3. Vol I, No. 553, 59 FR 59148, Market-based Ratemaking for Oil Pipelines, Final Rule

This final rule established filing requirements for oil pipelines seeking market-based rates. The rule specifies the information that the Commission considers germane to a determination of whether markets are competitive. The rule was issued as a companion to the Commission's 1993 final rule, carrying out the mandate of the Energy Policy Act of 1992 that the Commission establish a simplified and generally acceptable ratemaking methodology for oil pipelines. In that rule, the

Commission recognized that some pipelines may seek to charge market-based rates in competitive markets.

Impact of Moratorium

The moratorium would deny oil pipelines a consistent format to follow in making their market showings. The Commission staff could be under the burden of seeking additional information from oil pipelines, and the discovery process and arguments for and against a determination of competitiveness could be complicated in a contested proceeding.

4. Vol II, No. 262, Removal of Outdated Regulations Pertaining to Sales of Natural Gas Production, Docket No. RM94-18-002, Order Denying Rehearing

This order denied rehearing of a final rule, eliminating regulations which had implemented price ceilings applicable to sales by natural gas producers established by the Natural Gas Policy Act of 1978. Those regulations were no longer necessary, because the Wellhead Decontrol Act of 1989 removed the relevant price ceilings. The final rule became effective before November 9, 1994.

Impact of Moratorium

Since the rehearing order made no change in the final rule, the moratorium would probably have no effect on the final rule.

5. Vol II, No. 279, 60 FR 1718, Standards For Electronic Bulletin Boards Required Under Part 284 Of The Commission's Regulations, Docket No. RM93-4-006, Order No. 563-D, Order Modifying Capacity Release Data Sets

This order adds one requirement to the information that interstate natural gas pipelines must post on their electronic bulletin boards regarding capacity that the pipelines' customers reassign or resell under the Commission's capacity reassignment regulations. The final rule issued before November 9, 1994 required the posting of the rate at which capacity is resold. This order requires the posting of the maximum rate for each resale so that the industry and the Commission can determine the amount of discounting that takes place.

Impact of the Moratorium

The moratorium would have the effect of decreasing the amount of information available both to the Commission and the public about capacity reassignments.

B. Pending Rulemakings Not on OMB's List

1. Pricing Policy For New And Existing Facilities Constructed By Interstate Natural Gas Pipelines, Docket No. PL94-4-000, Anticipated Notice of Proposed Rulemaking

The Commission has under consideration a proposed rule or policy statement governing the policies it will follow in setting rates applicable to new and existing pipeline capacity constructed by interstate natural gas pipelines. The Commission has held a public conference on the issue of setting rates for new facilities, and the industry supported the adoption of such a policy so that they can make more informed decisions about whether to purchase the new capacity being built.

Both the Administration and the Congress have supported increased use of natural gas and construction of any necessary new pipeline facilities. The new pricing policy will encourage that construction.

Impact of Moratorium

The moratorium would affect the Commission's ability to provide the gas industry with the increased certainty about the rates for pipeline capacity that the industry has been requesting.

2. Alternatives to Traditional Cost-of-Service Ratemaking for Natural Gas Pipelines, Docket No. RM95-6-000, Anticipated Notice of Proposed Rulemaking

The Commission is considering a proposed rule to establish criteria for the evaluation of proposals from natural gas pipelines to implement alternative pricing methods. To this end, the Commission issued a request for comments on alternative pricing methods on February 8, 1995. The Commission's initiative in this area is in response to numerous requests from natural gas pipelines to depart from the traditional cost-of-service ratemaking method. Pipelines have submitted proposals to implement market-based rates, incentives rates, and other forms of alternative pricing. Currently, the Commission analyzes such proposals on a case-by-case basis.

Impact of Moratorium

The Commission is interested in developing a framework for analysis that could be applied generically, in order to streamline the process of evaluating alternative pricing proposals and to minimize the regulatory burden on pipeline applicants. It is expected that the Commission's action will be favored by the natural gas pipeline industry.

3. 60 FR 3111, Federal Energy Regulatory Commission (FERC), 18 CFR Part 154 [Docket No. RM 95-3-000], Filing and Reporting Requirements for Interstate Natural Gas Company Rate Schedules and Tariffs; Issued December 16, 1994, ACTION : Notice of Proposed Rulemaking, FEDERAL REGISTER VOL. 60, No.9

The Commission proposed a major overhaul of its regulations governing natural gas company filing and reporting requirements. Specifically, the Commission intends to replace its regulations to focus on transportation services instead of pipeline sales activities. The proposed new part 154 incorporates both basic "housekeeping" changes to eliminate obsolete language and sections, and substantive changes to update the regulations to reflect the many developments that have taken place in the natural gas industry since the regulations were first promulgated. The proposed filing requirements will improve the internal support of a pipeline's filing, reduce the discovery process in rate hearings for all parties and facilitate more rapid settlement or adjudication of pipeline rate proposals.

Impact of Moratorium

The proposed rule is limited to repealing outmoded regulations and refining and streamlining the regulatory process. It is a large step to improving the efficiency and management of rate proceedings at the Commission and reduces the regulatory burden to the industry. The imposition of the moratorium would delay substantial benefits and be opposed by the industry.

4. 60 FR 3783, Release of Firm Capacity on Interstate Natural Gas Pipelines, Docket No. RM95-5-000, Notice of Proposed Rulemaking

The Commission has proposed to revise its regulations relating to the manner in which customers of interstate natural gas pipelines can reassign or resell their interstate pipeline capacity. The proposed rule would permit customers to sell their capacity immediately to any other person without having to comply with regulations requiring a delay in the reassignment so other potential customers have an opportunity to submit higher bids.

Impact of Moratorium

The moratorium would adversely affect the efficiency of the growing secondary market in pipeline capacity. The rule removes a significant regulatory burden in the present program.

5. **Release of Firm Capacity on Interstate Natural Gas Pipelines, Anticipated Notice of Proposed Rulemaking**

The Commission is considering a proposed rule to reform other aspects of its regulations dealing with the manner in which customers of interstate natural gas pipelines can reassign or resell their interstate pipeline capacity (secondary market). The industry has been requesting the Commission to undertake just such a comprehensive review.

Impact of Moratorium

Application of the moratorium would adversely affect the gas industry because it would prevent the Commission from taking steps that would improve the competitiveness and efficiency of the secondary market in pipeline capacity.

III. Hydropower Program

A. Rulemakings on OMB's List

None

B. Pending Rulemakings Not on OMB's List

1. Policy Statement on Project Decommissioning at Relicensing, Docket No. RM93-23-000, issued December 14, 1994, at 69 FERC ¶ 61,336

On February 9, 1995, the Commission issued an order dismissing rehearing and denying reconsideration.

Impact of moratorium: The policy statement expresses the Commission's interpretation of its legal authority with respect to decommissioning of hydropower projects when their licenses expire. If the moratorium applied, it might create confusion as to whether the Commission was precluded from applying these general principles in deciding actual cases on the facts in the record.

2. Policy Statement on Use of Reserved Authority in Hydropower Licenses to Ameliorate Cumulative Impacts, Docket No. RM93-25-000, issued December 14, 1994, at 69 FERC ¶ 61,337

On February 9, 1995, the Commission issued an order dismissing rehearing and denying reconsideration.

Impact of moratorium: The policy statement expresses the Commission's intentions with respect to reserving authority in hydropower licenses to consider cumulative impacts of multiple hydropower projects in the same river basin, under circumstances in which the projects' licenses are issued at different times. If the moratorium applied, it might create confusion as to whether the Commission was precluded from applying these general principles in deciding actual cases on the facts in the record.

3. Notice of Proposed Rulemaking on Charges and Fees for Hydroelectric Projects, Docket No. RM93-7-000, issued January 26, 1994, at IV FERC Stats. & Regs. ¶ 32,505

Draft final rule is being prepared.

Impact of moratorium: The proposed amendments would update and modernize the Commission's assessment of annual charges on hydropower projects for the implementation of Part I of the Federal Power Act. For instance, the rule would adopt the 20th century practice of measuring electric capacity in kilowatts instead of in horsepower, and would eliminate various mistakes and inequities in the current regulations. The moratorium would freeze the mistakes, inequities, and anachronisms in place for another year. In a letter of February 3, 1995, to Chair Moler, Senator Larry E. Craig asked the Commission to expedite the issuance of a final rule, particularly with respect to the proposal to assess annual charges only after a project has commenced operation. Presently, annual charges are assessed as soon as the project is licensed even if it has not yet been constructed and has no source of revenue.

IV. Administrative Improvements

A. Rulemakings on OMB's List

Final Rule on Videotapes [the filing of], Docket No. RM95-2-000, issued December 2, 1994, at 69 FERC ¶ 61,282

No rehearing requests were filed.

Impact of moratorium: The final rule clarified the Commission's procedures for the filing of videotapes in Commission proceedings. The purpose of the rule was to protect the parties to the proceeding, and to enable the Commission to rely on the videotapes in reaching its decisions. The moratorium would restore the status quo ante state of confusion as to whether videotapes can be filed, and if so, pursuant to what procedures.

(Item 308 on page 33 of OMB's list of 615 documents)

B. Pending Rulemakings Not on OMB's List

1. Notice of Proposed Rulemaking on Alternative Dispute Resolution, Docket No. RM91-12-000, issued November 10, 1994, at IV FERC Stats. & Regs. ¶ 32,510

Draft final rule is being prepared.

Impact of moratorium: The proposed rule would implement the Alternative Dispute Resolution Act. This rule will expedite some proceedings and relieve some regulatory burdens by providing informal alternatives to formal litigation. The moratorium would preclude the Commission from adding alternative dispute resolution procedures to its regulations.

Mr. MYERS. Well, I think all of us recognize that our constituents are quite unhappy with overregulation. I was telling Chairman Selin earlier, they are just very unhappy. They want this reform, but I don't think they want the perverse reaction you are speaking about. Is there any litigation now? Are you being sued?

Ms. MOLER. Every day.

LITIGATION COSTS

Mr. MYERS. Too many times? I have taken more than my five minutes. Would you provide for the record what type of litigation you have had in the past year and what the cost is to your Commission?

Ms. MOLER. I will be happy to do that. We have a large number of cases pending before the various courts of appeals at any time, and that is because there are winners and losers in our caseload.

[The information follows:]

LITIGATION COSTS

The Commission's Solicitor's Office defends the legality of Commission orders that are appealed to the United States Courts of Appeals. The Office has also filed a brief in response to an invitation of the Supreme Court in connection with a case arising from a State Supreme Court involving one of the Statutes FERC administers. The Office also participated in United States District Court suits involving subjects the Commission administers. The annual cost to the Commission is approximately $2,000,000.

In addition, the Commission is involved from time to time in equal employment opportunity litigation, challenges to various procurement actions, and other general litigation. The annual cost to the Commission for that litigation is approximately $300,000. Finally, the Commission sometimes initiates enforcement actions concerning regulated companies in the U.S. district courts. The annual cost to the Commission for that litigation is approximately $100,000.

Mr. MYERS. Those are licensees, I presume, bringing action. Is that correct, or is it environmental groups who are unhappy? What type of statistics do you have?

Ms. MOLER. The major litigation that is pending right now is litigation that has been pending for a number of years, challenging the Commission's Order Number 636. It is pending before the D.C. Circuit. It sat before another circuit court of appeals for a couple of years before they transferred it to the D.C. Circuit, and there are several dozen cases where we have applied that order to individual pipeline companies that are backed up behind that case challenging the rule. That is our major chunk of litigation, and it has been before the court of appeals. We don't expect that litigation to be resolved until perhaps fall of 1996.

Mr. MYERS. Mr. Bevill.

Mr. BEVILL. Thank you, Mr. Chairman. Welcome to you again.

Ms. MOLER. Good to see you.

COMPETITION

Mr. BEVILL. One statement I particularly like is that you have found that the best regulation, in effect, is competition. Are you in a position to encourage competition?

Ms. MOLER. Absolutely. We have been encouraging competition in the natural gas industry through a series of rulemakings, and we now have a fully competitive wellhead market. We now have pipelines that are generally considered to be monopoly transporters between two points, but we are trying to figure out whether we can loosen up our regulation of the pipelines.

We have determined that wholesale power generation is a competitive industry, and we are no longer regulating the rates for new entrants in that business, so what we are trying to figure out is where our competitive marketplace exists in the industries that we regulate, and if so, let that competition regulate it effectively and where the entities still exercise monopoly power, which, of course, would call for us to continue to regulate.

Mr. BEVILL. I commend you. As the Chairman mentioned, I notice that you have reduced the amount of money that you are requesting for every program you have this year, and we haven't had many people come in here that have done as thorough a job, apparently, as you have.

Ms. MOLER. Thank you.

WORKLOAD

Mr. BEVILL. As far as your rules and regulations, where do you spend most of your time? In your jurisdiction, you have got natural gas, which seems to be growing a great deal, doesn't it?

Ms. MOLER. Hopefully we are encouraging use of natural gas in new markets.

Mr. BEVILL. It has an environmental advantage.

Ms. MOLER. Mostly what is happening is that our cases, while we are not having as many new cases come in, have gotten a lot more complicated and a lot more difficult to adjudicate, and that is a change for us.

We can no longer count our productivity as a case in, a case out the door. For example, one of these restructuring cases for a natural gas pipeline is just one workload item, but it is a complex undertaking involving literally thousands of hours of staff time and industry time.

Mr. BEVILL. I am curious to know how current are you with your caseload?

Ms. MOLER. Our backlog is declining in virtually every one of the program areas under the Commission's jurisdiction.

Mr. BEVILL. And what is the average time now that a case pending before you would take?

Ms. MOLER. It is really hard to come up with an average. If a rate case, for example, goes through a whole hearing before an administrative law judge and doesn't settle—and we clearly encourage settlements—it can be two or three years. But the vast majority of our electric cases, for example, that are set for hearing do settle, and so we don't have to take that long.

We are doing everything we can with all of the sophisticated administrative dispute resolution techniques and the like to encourage settlements wherever possible, but some contested on-the-record proceedings that go through a hearing and ultimately a Commission decision can take several years.

Mr. BEVILL. Thank you, Mr. Chairman.

Mr. MYERS. Mr. Knollenberg.

BUDGET REDUCTION

Mr. KNOLLENBERG. Thank you, Mr. Chairman. Ms. Moler, you have been with the group for five years now?

Ms. MOLER. A little more than—six, sir.

Mr. KNOLLENBERG. What kind of growth have you seen in the last five years? I commend you on what appears to have taken place. Your fiscal year 1996 request has dropped, and I want to talk about that, but what was it in 1989?

Ms. MOLER. In fiscal year 1989 our authorized FTE ceiling was 1,658 people. This year——

Mr. KNOLLENBERG. What was the budget that year, by the way?

Ms. MOLER. I don't think I have that number.

Mr. KNOLLENBERG. I assume, again, adjusted for inflation it was higher?

Ms. MOLER. Significantly higher adjusted for inflation. We have 200 fewer people than we did that many years ago.

Mr. KNOLLENBERG. I noticed in the last year, though, you have only cut 10. I think you said in the last two years you have cut 23 or something like that. Is that right?

Ms. MOLER. Yes.

Mr. KNOLLENBERG. So it can't be in personnel costs unless they were some very, very highly paid people. So your savings must have been in some other areas. You have already mentioned to the Chairman and Mr. Bevill something of a savings. But you have this $31 million surplus hanging out there, too. And I know in the numbers that are requested for fiscal year 1996, it is a reduction of approximately $15 million. Are you adjusting for inflation and taking half of that $31 million surplus and factoring it into the budget request?

Ms. MOLER. Yes. We intend to spend $151 million, but our appropriation request is $136 million. The savings come from $10 million in lower salaries and benefit requirements because of fewer people and because the Congress, of course, eliminated the 1994 general pay raise, and we had lower than anticipated fiscal year 1995 pay raise. We have also saved $8 million in program contracts by using money left over from prior years, taking a real hard look at our prior year practices.

Mr. KNOLLENBERG. Program contracts, how do you do that? Give me just an example.

Ms. MOLER. We contract with Oak Ridge National Lab to do environmental analysis for a gas pipeline certificate. We write them a check. It turns out we don't spend the entire amount because we may not use as many hours under the contract as we anticipated. We would, and so we now know those hours and we have a credit account with them, and we are using the credit account in this coming fiscal year.

Mr. KNOLLENBERG. You have done, I believe, a fairly successful job of downsizing. You have done it beyond personnel; you have done it in the other areas as well.

Ms. MOLER. We have taken a much more in-depth look at our management of contracting.

JEFFERSON COUNTY SUPREME COURT DECISION

Mr. KNOLLENBERG. Let me talk to you in the time remaining, Madam Chairman, about Jefferson County. I know you exhibited a little concern about that.

Ms. MOLER. Yes, sir.

Mr. KNOLLENBERG. Is this a case where the government may have gone too far? Has the Supreme Court, a branch of government, gone too far? Has it compromised your ability to function, your ability to do your work?

Ms. MOLER. Yes, sir, it has.

Mr. KNOLLENBERG. What about the future? I am sure that is what you are looking at here. What does it do about the past? Maybe it does all kinds of things.

Ms. MOLER. The effect of the decision is that State water quality agencies under the Clean Water Act will now be able to specify the flows that have to happen for hydro, water going through a dam, that have to happen for hydropower projects. Prior to the decision, we had the ability to look at and balance all the competing interests, but now with that decision, State water quality standards have turned into the—have given the States authority to specify the water, the quantity of water that has to go through a hydropower project. So instead of being a central Federal decision-making process, we now have State environmental agencies that are regulating these dams.

Mr. KNOLLENBERG. So who is the official referee?

Ms. MOLER. We no longer can referee. There is no single referee anymore. That is the problem.

Mr. KNOLLENBERG. So you see some real problems in that area?

Ms. MOLER. Yes. We have already had a number of State water quality decisions where they are doing things that otherwise we would have disagreed with and not gone along with under the Clean Water Act.

Mr. KNOLLENBERG. Do you think Congress will eventually have to legislate?

Ms. MOLER. I think you have two choices. You can see a significant loss of hydropower development and hydropower production because of the water quality issue becoming so important on the State level or else you can put a referee back in charge.

Mr. KNOLLENBERG. That concludes my questions. I thank you very kindly for being here today.

Mr. Chairman, I will yield back.

Mr. MYERS. Thank you, Joe.

Mr. Frelinghuysen.

MOUNT HOPE PUMPED STORAGE PROJECT

Mr. FRELINGHUYSEN. I have a district-related question for you, Ms. Moler. I hope you don't mind me asking it. This relates to the Mount Hope Pumped Storage Project. As you may know, this is a 2,000-megawatt independent power project known as the Mount Hope Pumped Storage Project licensed by your agency, as I understand, in 1992. And under your rules, construction must begin by August of 1996.

As you may be aware, since the project was licensed, the licensee has been extremely active in pursuing the development of the project. It is my understanding that Mount Hope has spent approximately $25 million preparing for the construction of the project. Finalizing this project has required more time than anticipated, owing to the current changes taking place in the electric industry, which you have alluded to on a number of occasions in your testimony. Given this set of facts, would you oppose an extension by Congress of the deadline to begin construction?

Ms. MOLER. No.

Mr. FRELINGHUYSEN. You would not. Could you comment on the whole issue of extensions and whether there is a common practice?

Ms. MOLER. We are limited under the Federal Power Act in the amount of time we can give a licensee, allow a licensee to begin construction. They have an initial two-year period. We can extend it once, so there is a total of four years. Mount Hope, and I voted to issue the project's license, will run up against——

Mr. FRELINGHUYSEN. We thank you for that.

Ms. MOLER [continuing]. Will run up against that deadline as you have said next fall. A number of hydropower projects across the country have run into that.

Mr. FRELINGHUYSEN. About how many?

Ms. MOLER. I don't have the precise figures at my fingertips. Some of them just give up. They realize they cannot get a power purchase agreement from the local utility that will enable them to operate profitably and they quit. Others diligently pursue these things and they still can't break through on the economics or else they have some problem with licensing by another agency, but there may be 15 in play at any given time. That is a rough estimate.

Last year, at the end of the Congress there was a bill that went back and forth between the House and the Senate to extend several of them. The only time we have objected to an extension is when there has been a really long period of time and there is basically very little hope that the project is economic.

We don't think it makes sense to give a developer an exclusive right to a site in perpetuity, and so I have objected to a couple of the extensions where they have done it several times, but by and large, we have not objected to those who have come to the Congress for extensions for two years or four years, something like that.

Mr. FRELINGHUYSEN. We appreciate your accommodation. Thank you, Mr. Chairman.

ELECTRIC POWER COMPETITION

Mr. MYERS. Thank you. Madam Chair, you have cited Order 636, which did a lot in creating competition for the natural gas industry and it has, as you said, caused you some problems, I guess, with litigation that you didn't ask for.

Ms. MOLER. We expected it.

Mr. MYERS. Order 636 kind of took out the middleman there. A person can bypass now in Louisiana and ship oil over somebody's pipeline and pay a pipeline for it, but the pipeline never owns it; isn't that really the significant difference?

Ms. MOLER. Yes.

Mr. MYERS. How are you going to get that done with the electric industry in wheeling? Aren't they resisting that right now? You get power from X to Z and you have to go through Y to get there?

Ms. MOLER. Well, unlike the natural gas business, we have just a portion of the electric business under our jurisdiction, and the States will have to decide whether they want to allow——

Mr. MYERS. Intrastate?

Ms. MOLER. No, it is really end users, if they will want to allow Dow Chemical or Ford Motor Company to buy directly. That is up to them, that is called retail wheeling. On the wholesale level, we intend to propose a rule that will make it possible for utilities to wheel through all other utilities so that they can shop around for the best power bargain.

Mr. MYERS. Would that apply intrastate—within a State—as well as interstate?

Ms. MOLER. It is different under the Power Act where we do have jurisdiction over wholesale sales within a State. Public Service of Indiana buys from Northern Indiana Public Service Company, for example. We have jurisdiction over that, and if they transport between the two, we have jurisdiction over that. But we are proposing a rule that would say to the utilities, "You open your lines to competition, and we will compensate you for the investments that are stranded as a result of that change."

Mr. MYERS. You will allow them to be compensated?

Ms. MOLER. Yes. And, of course, the consumer will pick up the tab for this.

Mr. MYERS. Well, the Energy Policy Act of 1992 has helped somewhat, hasn't it? But is there some conflict with the old Federal Power Act, which goes back 40 or 60 years?

Ms. MOLER. The Energy Policy Act gave us very specific authority to direct one utility to carry power or to transport for another. It is case-specific. The cases are lengthy, they are complex, but we do them one at a time, and we are contemplating doing a much broader approach rather than this case-specific adjudication of the Energy Policy Act.

There are some holes in our authority. We don't have jurisdiction as a general matter over the power marketing administrations. We don't have jurisdiction over the publicly owned power entities, the smaller ones, principally the municipally owned power entities, though we can force them to wheel, if you will, under the Energy Policy Act.

Mr. MYERS. As I recall the Federal Power Act—and I haven't looked at it for many, many years—it seemed to protect areas and protect utilities being competitive, protecting, what is the word I am trying to come up with?

Ms. MOLER. Franchise territories.

Mr. MYERS. Yes, I couldn't come up with "franchise." It seemed like the Energy Policy Act of 1992 would be in conflict with that.

Ms. MOLER. It really isn't.

Mr. MYERS. I apologize, but we have a vote under way. If you can stay a little bit, Mr. Fazio will be back. He has some questions he wants to ask, and all of us will have some questions we will probably put in the record for you, but thank you very much for coming today and testifying, and the committee will stand in recess for about two or three minutes until Mr. Fazio gets back. Thank you. I am sorry about the interruption here, but that is our job.

Ms. MOLER. I understand.

[Recess.]

Mr. FAZIO. I guess we can reconvene the committee of one, and I gather we will not have any others coming by, so we will recess until 10:00 on Tuesday when we complete this line of questioning.

BIOGRAPHIES OF FERC COMMISSIONERS

Commissioner, it is good to see you here. Could you for the record, and certainly for my edification, give me the brief bios of the other members of the Commission? I know each Commission has its own tradition in terms of presenting its budget, but I am interested to know the current status of the appointments to FERC.

Ms. MOLER. I certainly will.

Mr. FAZIO. Could you do so briefly.

[The information follows:]

Federal Energy
Regulatory
Commission

Official Biography

VICKY A. BAILEY

Vicky A. Bailey was nominated to be a Commissioner of the Federal Energy Regulatory Commission by President Clinton on May 10, 1993, for a term ending June 30, 1996. She was confirmed by the Senate on May 20, 1993, and sworn into office on June 6, 1993.

She served previously as a Commissioner on the Indiana Utility Regulatory Commission and was a member of the Executive and Electricity Committees of the National Association of Regulatory Utility Commissioners.

She was Vice President for Administration of the J. Bailey Company, Assistant Admissions Officer at the Indiana University School of Medicine, and Promotions Director of the Owens-Illinois, Inc. Glass Container Division.

Born in Indianapolis, Indiana, she holds a Bachelor of Science degree from the Krannert School of Management at Purdue University.

A Republican, she resides in the metropolitan area.

June 1993

Federal Energy
Regulatory
Commission

Official Biography

JAMES JOHN HOECKER

James John "Jim" Hoecker is a Commissioner of the Federal Energy Regulatory Commission. He was nominated by President Clinton and confirmed by the U.S. Senate in 1993. In 1995, Commissioner Hoecker will be seeking renomination to a full term on the Commission.

As a Commissioner, Mr. Hoecker has worked in all areas of Commission jurisdiction. However, he has taken a special interest in "second generation" pipeline restructuring issues such as capacity release, and in the establishment of a competitive wholesale electric power market. Commissioner Hoecker has worked with state regulatory agencies and state legislators as they address the local and regional impacts of pro-competitive change in these regulated industries.

Commissioner Hoecker's substantial experience includes extensive work in both the public and private sectors. In the private sector, his practice focused on gas production, transmission, and distribution issues as well as on electric utility matters. Commissioner Hoecker was Of Counsel to the Washington office of Jones, Day, Reavis & Pogue (1990-1993) and a Partner in Keck, Mahin & Cate (1988-1990). Upon his confirmation to public office, Mr. Hoecker became the first member of the Commission to have served on its staff. He was Assistant General Counsel for Gas and Oil Litigation, Assistant General Counsel for Rulemaking and Legislative Analysis, and a legal advisor to Commissioners Matthew Holden and Georgianna Sheldon.

Commissioner Hoecker has published widely on energy and administrative law issues, as well as on historical topics. His latest publication is entitled "The NEPA Mandate and Federal Regulation of the Natural Gas Industry," 13 Energy Law Journal 265 (1992). He is an assistant editor of the forthcoming Electricity Law, Policy and Regulation in the 1990s (ABA) and was Assistant Editor, Natural Resources & Environment Magazine (ABA). The Commissioner also chaired the Natural Gas Rate and Accounting Regulations Committee of the Federal Energy Bar Association.

Commissioner Hoecker holds a B.A. from Northland College in Ashland, Wisconsin, an M.A. and a Ph.D. in History from the University of Kentucky, and a J.D. from the University of Wisconsin Law School. He has been a Trustee of Northland College since 1989.

Commissioner Hoecker was raised in Eagle River, Wisconsin and has lived in northern Virginia since 1979.

December 1994

825 NORTH CAPITOL STREET, N.E., WASHINGTON, D.C. 20426

Federal Energy Regulatory Commission

Official Biography

WILLIAM L. MASSEY

William L. Massey was nominated by President Clinton to be a member of the Commission, and was confirmed by the Senate on May 20, 1993. His term expires June 30, 1998.

Before joining the Commission, Mr. Massey was a partner in the Washington office of Mitchell, Williams, Selig, Gates & Woodyard, where he represented electric utilities and other clients in a variety of federal policy matters. He was, for example, heavily involved in the Congressional debates that led to the enactment of the Energy Policy Act of 1992. Mr. Massey served on the Presidential Transition Team for the Department of Energy during December 1992.

Mr. Massey was of counsel and then a partner at Mayer, Brown & Platt from 1989-91. He served as Chief Counsel and Legislative Director to Senator Dale Bumpers (D-Ark.) from 1981-89, where he was involved in numerous energy, utility, environmental and other legislative matters. Before that, he served for two years as Law Clerk to the Honorable Richard S. Arnold (now Chief Judge) of the U.S. Circuit Court of Appeals for the 8th Circuit.

Mr. Massey taught at the University of Arkansas School of Law during 1978. From 1976-78, he served as Chief Attorney and then Executive Director for Central Arkansas Legal Services, where he was involved in a wide variety of matters on behalf of low income clients. Before that, he was an associate with Youngdahl & Larrison in Little Rock, Arkansas.

During 1973, Mr. Massey served as a Captain in the U.S. Army Field Artillery, stationed at Ft. Sill, Oklahoma.

Mr. Massey received a Juris Doctorate from the University of Arkansas School of Law in 1973, and a Master of Laws from the Georgetown University Law Center in 1985.

He is a native of Malvern, Arkansas and now resides in Bethesda, Maryland.

December 1994

825 NORTH CAPITOL STREET, N.E. WASHINGTON, D.C. 20426

Federal Energy Regulatory Commission

Official Biography

DONALD F. SANTA, JR.

Donald F. Santa, Jr. was nominated by President Clinton to be a Member of the Federal Energy Regulatory Commission on April 29, 1993. He was confirmed by the U.S. Senate on May 20, 1993. Commissioner Santa's term expires on June 30, 1997.

Commissioner Santa also is a member of the National Association of Regulatory Utility Commissioners (NARUC) Committee on Gas. He was appointed to the committee by NARUC President Keith Bissell on August 24, 1994.

Prior to his confirmation, Commissioner Santa was Counsel to the U.S. Senate Committee on Energy and Natural Resources. While on the committee staff, his primary area of responsibility was natural gas policy issues. Between 1989 and 1993, he staffed the committee's chairman, Senator J. Bennett Johnston of Louisiana, in connection with the Natural Gas Wellhead Decontrol Act of 1989, energy aspects of the Clean Air Act Amendments of 1990, and the natural gas provisions of the Energy Policy Act of 1992.

Prior to joining the staff of the Committee on Energy and Natural Resources, Commissioner Santa was an associate attorney with the Washington, D.C. law firm of Van Ness, Feldman, Sutcliffe & Curtis, P.C. from 1985 to 1989. He also was an associate attorney with the Washington, D.C. office of the law firm of Andrews & Kurth from 1983 to 1985. At both law firms, his practice involved primarily the representation of clients on energy-related matters.

Commissioner Santa was born and raised in Connecticut. He received his J.D. degree in 1983 from the Columbia University School of Law and his A.B. degree in 1980 from Duke University.

Commissioner Santa, his wife Karen, and newborn daughter Madelyn reside in Arlington, Virginia.

September 1994

Ms. MOLER. One of my colleagues is here today, Don Santa.

Mr. FAZIO. How do you do, good to see you.

Are all the positions filled at the moment?

Ms. MOLER. Yes. One commissioner's term expires each year now. That was not the case before. So we have gotten that straight.

Mr. FAZIO. Is that a policy of the administration or is that legislation that requires it?

Ms. MOLER. It is legislation. It was an amendment to the Department of Energy Organization Act. Commissioner Hoecker's term expires June 30th of this year, but the Commission is full at the moment, and four Commissioners were appointed two years ago, and I was reappointed last summer.

CALIFORNIA PURPA ENFORCEMENT ACTION

Mr. FAZIO. Great. I just wanted to follow a line of questioning relating to the Public Utility Commission ruling in California. Because I think it is of importance to my State, I don't mind being last. At the same time, I think it is very important as a precedent that would certainly impact on many other States in terms of conflicts between laws that apply and the regulatory or adjudicatory role of FERC.

My understanding is that this ruling, in effect, made the complex five-year process that we in California use with our Energy Commission and our Public Utilities Commission clearly inadequate under PURPA. But because it is an adjudicatory issue, I don't really want to get into a lot of the points of view that have been expressed to me by both sides, who I, of course, just as you, must talk to. So I am going to try to stick, if I can, to process.

I don't want it to sound too inquisitory, but I hope you will understand why I am interested in how the process worked in this case. And so I have some questions that kind of walk through some of the issues that I had brought to my attention by both sides of this dispute.

Could you briefly describe for me the nature of your jurisdiction on this matter?

Ms. MOLER. Certainly. As you alluded to, the California Public Utilities Commission had undertaken a proceeding under the Public Utility Regulatory Policies Act of 1978, affectionately known as PURPA, to determine what kinds of resources the investor-owned utilities in California would have to buy under PURPA.

It has been a protracted proceeding in California. Parts of it have been going on for seven years. In December of 1994, the California Public Utilities Commission issued an order that required the three IOUs—PG&E, SoCal Edison, and San Diego Gas and Electric—to acquire certain resources under PURPA.

Two of those utilities made filings with us in January, January 6th and 20th or thereabouts, challenging the Commission's ultimate determination. They challenged the determination as saying that the California Public Utilities Commission had required them to pay more than they were required to pay under PURPA. They also challenged the staleness of the data relied upon by the Commission in determining how many kilowatts they would have to buy. They filed this under Section 210(h)(2)(b) of PURPA that enables utilities to come to the Commission and challenge the results of State Commission determinations.

Mr. FAZIO. Is that the statutory authority that you have in this regard?

Ms. MOLER. Yes, sir.

Mr. FAZIO. Is that the only one?

Ms. MOLER. Yes. We noticed—they were really enforcement petitions. We noticed the petitions. Under that section of PURPA we had to act within 60 days or else the utilities were free to go to court, and that is a statutory requirement in the section I just referred to. So we were by law on a fast clock if we chose to entertain this challenge.

We noticed their petitions, a bunch of parties intervened, virtually every affected interest intervened, as did several Federal agencies. Only one of those took a position, and that was E.P.A.

Mr. FAZIO. Could I have, for the record, a list of the intervenors?

Ms. MOLER. I have a copy of the Commission's order.

Mr. FAZIO. You were ready for this?

Ms. MOLER. I was, yes. It lists all of the interventions and the positions they took.

[The information follows:]

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: Elizabeth Anne Moler, Chair;
Vicky A. Bailey, James J. Hoecker,
William L. Massey, and Donald F. Santa, Jr.

Southern California Edison Company) Docket No. EL95-16-000
)
San Diego Gas & Electric Company) Docket No. EL95-19-000

ORDER ON PETITIONS FOR ENFORCEMENT ACTION PURSUANT TO SECTION 210(h) OF PURPA

(Issued February 23, 1995)

Introduction

On January 6, 1995, Southern California Edison Company (Edison) filed a petition for enforcement pursuant to section 210(h) of the Public Utility Regulatory Policies Act of 1978 (PURPA), 16 U.S.C. § 824a-3(h) (1988). On January 18, 1995, San Diego Gas & Electric Company (San Diego) filed a petition for enforcement pursuant to section 210(h) of PURPA or, in the alternative, for a declaratory order.

Both utilities state that the California Public Utilities Commission (California Commission) has ordered them to sign long-term, fixed-priced contracts with qualifying facilities (QFs) to purchase significant amounts of unneeded QF capacity at prices far in excess of their avoided costs. They argue that this new directive is in violation of PURPA and this Commission's implementing regulations. The California Commission responds that the two utilities challenge only a small part of a complex and comprehensive resource plan that is entirely within its implementation role under PURPA. Numerous intervenors support or challenge all or portions of the challenged program.

While we have grave concerns about the need for this capacity and the staleness of the data relied upon by the California Commission, we do not reach a definitive conclusion on these issues because we decide the cases on other grounds. We do, however, find that the California program at issue violates PURPA and our implementing regulations because the California Commission did not consider all sources in reaching its avoided cost determinations.

Edison's Enforcement Petition

Edison states that the California Commission has ordered Edison to sign long-term, fixed-price contracts with QFs to purchase 686 MW of new capacity that will come on line in 1997-1999. Edison states that these contracts will require payments demonstrably more expensive than alternative sources of power, will require Edison to purchase capacity before it is needed, and will dramatically increase stranded costs in a soon-to-be-restructured electric utility industry.

Edison explains that these obligations are the result of the California Commission's Biennial Resource Plan Update (BRPU), which, pursuant to section 210(f) of PURPA, implements this Commission's rules governing the purchase by electric utilities of electricity from QFs. According to Edison, 1/ the BRPU has three stages. First, following the latest projections of energy and capacity needs of California utilities (Edison, San Diego, and Pacific Gas and Electric Company (PG&E)) made by the California Energy Commission (CEC), the utilities file a resource plan identifying potential resource additions. The California Commission examines these plans and determines what new resources the utilities would add. Second, after the utilities have supplied certain data, the California Commission determines the utilities' assumed costs, known as "benchmark prices", for these resource additions, and determines which of the additions could be avoided. Third, QFs are then allowed to bid against the utilities' benchmark prices for the new resources. If bids received by the QFs are below the utilities' benchmark prices for the new resources, the utilities are then directed by the California Commission to enter into standard contracts (called "Final Standard Offer 4" or "FSO4" contracts) with the winning bidders with respect to each avoided resource. The winning bidders are paid the price bid by the second lowest bidder with respect to each avoided resource. (This procedure is referred to as a second-price auction.) Certain winning bidders receive additional payments to reflect the assumed value to society of reduced air emissions.

Based on the CEC's 1990 electricity report, the California Commission concluded in 1992 that Edison would construct 624 MW of new generation from 1997 to 1999 as follows: two new geothermal plants, one wind farm, and the repowering of an existing steam plant. The California Commission also estimated

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1/ Edison, San Diego, and the California Commission's factual descriptions of California's implementation of PURPA agree in all major aspects. Conclusions, such as whether the implementation results in rates exceeding avoided costs, differ.

Edison's costs for construction of each of these projects, which were given the name "Identified Deferrable Resources" (IDRs). Edison states that even though the estimated costs were many times larger than the capital costs of constructing new gas-fired turbines, the California Commission concluded that the IDRs were economic by imputing massive environmental compliance costs to the alternative, gas-fired resources.

In 1993, pursuant to California Commission directive, Edison solicited bids for 624 MW of new capacity, broken down into four separate IDRs. Only QFs were allowed to bid. The California Commission, in implementing a California statute, required that half of the capacity for three of the four IDRs be reserved solely for renewable bidders. The solicitation produced bids lower than the IDR benchmarks.

Edison argues that the California program is in conflict with PURPA and the Commission's rules implementing PURPA. Edison states that a fundamental flaw in the solicitation structure is its assumption that any QF contract that is priced below the utility's assumed cost of providing the same power to itself through the construction of new resources (the benchmark price) is necessarily below avoided cost. Edison states that the California Commission ignores this Commission's regulations, which define avoided costs as the costs of replacement energy the utility could generate itself or "purchase from another source." 18 C.F.R. § 292.101(b)(6) (1994). Edison also states that lower-cost alternatives were readily available for 4.0 cents/kWh or less, even though it was required to execute contracts with QFs at initial rates as high as 6.6 cents/kWh.

Edison argues that this result also is the product of the California Commission's intention to favor "renewable" QFs. Edison explains that the California Commission segmented the solicitation into four separate IDRs (274 MW repower, 50 MW wind, 100 MW geothermal, and 200 MW geothermal), and that a QF was required to bid separately against each IDR. Compounding this segmentation, half of the renewable IDR capacity was set aside for bidding only by renewable QFs. A related flaw, in Edison's opinion, was the mandate that winning bidders be paid an air emissions adder/subtracter based on the difference in projected emissions between the bid-winning QF project and the IDR.

Edison also criticizes the California Commission for failing to determine the utility's avoided cost calculated at the time the power is delivered or "at the time the obligation is incurred." 18 C.F.R. § 292.304(d)(2)(ii) (1994). Edison claims that the California Commission's avoided cost determination was made with stale data.

Finally, Edison argues that the California QF program is inconsistent with the California Commission's ongoing proposal to restructure the electric utility industry, whereby certain retail customers will be able to opt for "direct access", i.e., retail wheeling. Edison states that the failure to address the effect of restructuring on avoided costs, and the failure to allow a means to address stranded costs in the standard offer contracts, violates PURPA and the Commission's implementing regulations.

Edison states that it is required under the BRPU to execute contracts with the QFs by March 29, 1995. Edison requests that the Commission act as expeditiously as possible. Specifically, Edison asks that the Commission either relieve it of its obligation to enter into contracts with the QFs by March 29, 1995 or, if the Commission declines to take action, to issue a notice of intent not to act in time to allow Edison to seek appropriate injunctive relief from a federal district court before it is required to sign the contracts.

Notice of Edison's filing was published in the Federal Register, 60 Fed. Reg. 2959 (1995), with comments, protests or interventions due on or before January 27, 1995.

Responses to Edison's Petition

The California Commission

On January 27, 1995, the California Commission filed a notice of intervention and protest to Edison's petition for enforcement. The California Commission states that its orders are lawful and consistent with PURPA and the Commission's regulations and asks this Commission to deny Edison's petition. The California Commission states that Edison's petition demonstrates:

> A lack of understanding that the [California Commission] orders concerning QFs are one element of a complex and comprehensive resource plan, and that one element of the plan cannot be changed without placing the entire program in jeopardy.
>
> A misunderstanding of the respective roles of the federal and state regulators in implementing PURPA and resource planning.
>
> Edison's failure to recognize that the [California Commission's] orders approve the acquisition of cost-effective QF resources at prices considerably below Edison's own costs of generating the electricity.

> A lack of recognition that the [California Commission] has adopted avoided cost pricing for QFs in complete compliance with PURPA and this Commission's regulations.
>
> A misunderstanding of the position of the CEC and the [California Commission] about the need for additional, cost-effective resources.
>
> An inexcusably late, last-minute request to stay decisions that the [California Commission] made years ago, and which QFs and others have worked for years to implement.

The California Commission states that its determination of avoided costs for sales of QF power is just one part of the BRPU, which is a complex process. (The California Commission's description of the BRPU agrees in all relevant respects with Edison's description.) According to the California Commission, the BRPU is designed to consider, balance, and implement a number of public policy goals. The BRPU considers customer need for additional resources, the costs of additional resources, environmental costs and benefits, and concerns about competition. The California Commission states that Edison's petition for enforcement is an attack on the entire process, in the guise of attacking one small element of the process, the determination of avoided cost. The California Commission states that granting the petition would force the California Commission to revisit the entire BRPU process in order to reconsider and rebalance a new set of factors. Such action would cause disruption of the state regulatory process.

The California Commission states that PURPA was designed as a cooperative venture between federal and state regulators. Each conducts certain functions designed to work together toward a common goal -- the development and exploitation of a national energy system that is diverse, reliable, conservation-minded, and reasonably priced. The California Commission characterizes the Edison petition as an attack on California resource planning decisions which it argues are a state function over which this Commission has no jurisdiction.

The California Commission also argues that there is no conflict between the BRPU and the Commission's regulations implementing PURPA. Specifically, the California Commission states that its determination of avoided costs takes into account the factors listed by this Commission in its regulations. See 18 C.F.R. § 292.304(e) (1994). These factors include: QF daily and seasonable peak capacity; utility capability to dispatch; QF reliability; QF contract terms (such as duration); potential coordination between the QF and the utility to accommodate utility scheduled outages; the usefulness of the QF during emergencies; and the value of the QF's energy and capacity. The California Commission states that it determines avoided costs with these factors in mind.

Moreover, the California Commission states that Edison is inexcusably late in bringing its enforcement petition to the Commission. The California Commission explains that many of the directives that Edison now complains of are years old, and that Edison's delay threatens the integrity of the regulatory process. By way of example, the California Commission explains that its decisions concerning environmental adders and the set-aside of capacity for renewables, to which Edison now vigorously objects, are over three years old and cannot now be equitably upset. The California Commission also argues that Edison's delay threatens harm to the winning QFs and other parties which have spent years participating in the BRPU proceedings.

National Independent Energy Producers

On January 27, 1995, the National Independent Energy Producers (NIEP) filed a motion to intervene and protest. The NIEP argues that the California Commission properly determined Edison's avoided costs and urges this Commission to deny Edison's petition for enforcement. NIEP states that neither PURPA nor the Commission's regulations specify how states should determine avoided costs for QF sales. NIEP further states that the Commission traditionally has been respectful of the states' implementation role under PURPA and, accordingly, has been reluctant to review or alter state avoided cost determinations.

NIEP characterizes Edison's petition as raising three main arguments in support of its claim that the BRPU process results in QF prices above Edison's avoided costs:

1. Edison disputes the California Commission's inclusion of environmental externalities in its determination of avoided costs, and the California Commission's set aside for categorizing QF bids;

2. Edison claims it does not need the power from the QFs; and

3. Edison claims the California Commission should have taken into account data on avoided cost "trends."

NIEP states that these arguments miss the point. In NIEP's opinion, Edison is not challenging California's overall program for determining avoided costs, but rather is challenging specific determinations as to Edison's purchase obligations, which it claims are beyond Commission review.

Independent Energy Producers of New York, Inc.

On January 27, 1995, the Independent Energy Producers of New York, Inc. (IEPNY) filed a motion to intervene opposing Edison's petition. IEPNY supports the comments filed by NIEP.

Independent Energy Producers

On January 27, 1995, the Independent Energy Producers Association (IEP) filed a motion to intervene, answer and protest to Edison's filing. IEP is a trade organization composed of 42 entities that own or operate non-utility electric generation facilities, including seven members which are winning bidders in the California competitive bid solicitation which is the subject of this proceeding. IEP argues that the burden of proof is on Edison to justify its request for this unprecedented intrusion into state decisionmaking implementing PURPA. IEP states that where, as here, the record shows that the California Commission has conducted extensive proceedings, made detailed findings, and implemented a competitive bidding process, Edison has failed to satisfy that burden.

PG&E

On January 27, 1995, PG&E filed a motion to intervene. PG&E states that the same orders challenged by Edison require PG&E to purchase long-term QF power to fill capacity needs identified by the California Commission. PG&E states that it is required by the California Commission to award approximately 243 MW of long-term contracts to QFs. PG&E maintains that it would not enter into these contracts but for the California Commission orders.

US Generating Company and Fellows Generating Company, L.P.

On January 27, 1995, US Generating Company (USGen) and Fellows Generating Company, L.P. (Fellows) filed a joint motion to intervene and protest. USGen is a developer of QFs and other non-utility generating resources. Fellows is one of the QFs developed by USGen. USGen and Fellows state that Fellows was awarded approximately 372 MW of "winning bids" in the Edison solicitation for QF electricity. USGen and Fellows support dismissal of Edison's petition for the reasons set forth in the filing by IEP in this proceeding. USGen and Fellows also state that Edison has renegotiated the contracts representing over 85% of the capacity to be provided by winning bidders. USGen and Fellows state that this means that Edison's representation that it will be required to enter into power purchase agreements for 686 MW of capacity by March 29, 1995 is therefore false. USGen and Fellows believe that the renegotiated contracts resolve the issues raised by Edison and obviate the stated need for Commission action on Edison's petition.

Electric Generation Association

On January 27, 1995, the Electric Generation Association (EGA) moved to intervene. EGA requests that the Commission dismiss Edison's petition. EGA states that it is a national trade association representing independent power producers, including owners of QFs and exempt wholesale generators (EWGs). EGA states that its members include both winning and losing bidders in the Edison solicitation.

EGA states that PURPA, as supplemented by the Energy Policy Act of 1992, expressly calls for integrated resource planning at the state level to ensure the adequate, reliable and environmentally sound supply of electricity to the public. State legislatures and commissions consider a number of factors in planning a safe and reliable electric power supply, including: projected demand, environmental impacts, supply diversity and reliability. EGA states that PURPA also charges state commissions to determine, as a factual matter, the avoided costs of electric utilities. EGA states that states have been granted a wide degree of latitude in making avoided cost determinations because these determinations require consideration of traditional state issues such as demand forecasting, resource planning and supply diversity. EGA believes that this Commission should not second-guess the California Commission's policy and factual determinations that went into its determination of utility avoided costs.

According to EGA, the decision of the California Commission to limit electric power purchases to a particular type of supply resource is clearly within the state's authority. EGA states that Edison does not allege that the California Commission forced it to purchase any supply resource at prices that are higher than prices for other resources of the same type. According to EGA, in the absence of such an allegation, Edison has failed to demonstrate any inconsistency with PURPA's requirements.

Finally, EGA states that consideration of any industry restructuring proposal is inappropriate at this time because the restructuring proposal occurred after the submission of bids to Edison, and because its impact is speculative.

City of Vernon, California

On January 27, 1995, the City of Vernon, California (Vernon), a municipal electric customer of Edison, filed a motion to intervene in support of Edison's filing. Vernon states that

Edison pays sums for QF power that are much larger than the avoided cost value to Edison of such power. Vernon urges the Commission to relieve Edison of the excess cost burdens that Edison recites in its petition in order to allow Edison to become more price competitive.

Santa Fe Energy Resources, Inc.

On January 27, 1995, Santa Fe Energy Resources, Inc. (Santa Fe) filed a motion to intervene in opposition to Edison's petition. Santa Fe states that it is an independent domestic and international oil and gas producer. Santa Fe states that it has operated since 1905 in the Midway-Sunset oil field in San Joaquin Valley, which is the largest producing oil field in the contiguous 48 states, and that Santa Fe is the largest producer in the Midway-Sunset field. Santa Fe explains that it depends on steam to extract highly viscous oil from the Midway-Sunset field, that it is participating in a project with USGen and Fellows, and that it has deferred all other opportunities to obtain an inexpensive and reliable steam supply.

Santa Fe states that it has relied on the BRPU process, which it urges not be disturbed. Santa Fe also points out that the winning USGen/Fellows bid constituted a significant portion (374 MW) of the total capacity bid during the BRPU auction, and did not benefit from the environmental preferences with which Edison takes issue.

NARUC

On January 27, 1995, the National Association of Regulatory Utility Commissioners (NARUC) filed a motion to intervene, requesting that Edison's petition be denied. NARUC states that what Edison challenges is but one element of the California Commission's process, and that this Commission should stay out of the process in order to give the California Commission the flexibility to implement PURPA in light of local needs and conditions. NARUC also argues that to overturn the California Commission's determination of avoided costs would require this Commission to make factual determinations which it is ill-equipped to do, especially within the abbreviated time frame requested by Edison. Finally, NARUC urges the Commission, as a general matter, not to initiate enforcement actions which would disrupt complex state integrated resource planning processes. NARUC argues that such a disruption would be particularly unfortunate in light of the enactment of section 111 of the Energy Policy Act of 1992, which, it states, encourages states to undertake flexibly-implemented, multi-factor integrated resource planning.

Edison Electric Institute

On January 27, 1995, the Edison Electric Institute (EEI) moved to intervene in support of the petition filed by Edison. EEI urges that the California Commission's avoided cost determination violates PURPA in four respects: (1) the California Commission did not allow non-QFs to participate in the bidding process; (2) state law required a set-aside of capacity solely for renewable QFs; (3) state law required consideration of "externalities" not related to the cost of electricity to the utility; and (4) the record fails to reflect any reasonably current finding that Edison needs the capacity.

Niagara Mohawk Power Corporation

On January 26, 1995, Niagara Mohawk Power Corporation (Niagara Mohawk) filed a motion to intervene in support of Edison's petition for enforcement.

National Coal Association and Western Fuels Association

On January 27, 1995, the National Coal Association and the Western Fuels Association, Inc. (together, Fuel Associations) moved to intervene in support of Edison's petition. The Fuel Associations allege that Edison's true avoided costs are in the neighborhood of 3 cents/kWh, which, they claim, is the rate at which Edison could buy coal-fired electricity from out-of-state electric utilities. The Fuel Associations object to the use of phantom societal cost factors to inflate the cost of resources that electric utilities must purchase and that electric consumers ultimately must subsidize.

Seawest Energy Corporation

On January 27, 1995, Seawest Energy Corporation (Seawest) filed a motion to intervene. Seawest has ownership interests in a number of non-utility generating facilities, including QFs. Affiliates of Seawest were among the winning bidders in the Edison solicitation. Seawest opposes Edison's petition and supports the comments filed by IEP.

Zond Systems, Inc.

On January 27, 1995, as supplemented on February 8, 1995, 2/ Zond Systems, Inc. (Zond) filed a motion to intervene. Zond

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2/ On February 17, 1995, Edison filed a motion to strike the February 8, 1995 supplemental comments of Zond, as well as the February 8, 1995 supplemental comments of American Wind discussed *infra*.

states that it and its affiliates are engaged in developing wind farms throughout the United States and abroad. In California, the power production of Zond's wind-powered QFs totals approximately 260 MW. Zond participated in and won bids totalling 156 MW in the California Commission-mandated solicitation that Edison is challenging. Zond opposes Edison's petition and concurs in the comments filed by IEP.

American Wind Energy Association

On January 27, 1995, as supplemented on February 8, 1995, the American Wind Energy Association (American Wind) filed a motion to intervene. American Wind is an organization comprising manufacturers, developers and operators of wind energy technology. American Wind works to promote the development of wind energy as a reliable energy alternative throughout the United States. American Wind opposes Edison's petition and concurs in the comments of IEP.

DOE

On January 27, 1995, the United States Department of Energy (DOE) filed a notice of intervention without raising any substantive issues.

Southern California Gas Company

On January 27, 1995, Southern California Gas Company (SoCalGas) filed a motion to intervene without raising any substantive issues.

Magma Power Company

On January 27, 1995, Magma Power Company (Magma) filed a motion to intervene. Magma is engaged in the development of geothermal and other power generation projects. The power generation capacity of Magma and its affiliates exceeds 500 MW in the United States, with the vast majority of its production in California. All of Magma's production in the United States is generated by QFs. Magma states that it successfully participated in the California Commission-mandated solicitation and won bids to sell firm capacity and energy to both Edison and San Diego. Magma opposes Edison's petition and concurs in and supports the comments filed by IEP.

Air Products and Chemicals, Inc.

On January 18, 1995, Air Products and Chemicals, Inc., (Air Products), one of the winning bidders in the California process challenged by Edison, filed a motion to intervene. On January 27, 1995, Air Products filed a protest. Air Products argues that

Edison, in its petition, seeks to have the Commission second-guess the wisdom of the carefully considered resource plan that underlies the California Commission's competitive bid program. Air Products suggests that granting this request would set a dangerous precedent, inviting numerous requests for the Commission to micro-manage avoided-cost proceedings across the country. Air Products argues that such proceedings rest on factual findings that this Commission should not disturb, and are based on state police powers to regulate utility generation and resource planning.

Air Products argues that a utility's avoided costs should be measured by its costs of purchasing energy from other utilities, not from QFs. 3/ Air Products also argues that there is no argument that the California Commission could have set avoided costs administratively and required Edison to pay QFs the benchmark prices. That the California Commission went a step further and let QFs bid against the benchmark prices does not, in Air Products' opinion, mean that the California Commission must set the avoided cost rate at the lowest QF bid.

3/ In support, Air Products cites the following passage from the preamble to the Commission's QF regulations:

> If, by purchasing electric energy from a qualifying facility, a utility can reduce its energy costs or can avoid purchasing energy from another utility, the rate for purchase from a qualifying facility is to be based on those energy costs which the utility can thereby avoid. If a qualifying facility offers energy of sufficient reliability and with sufficient legally enforceable guarantees of deliverability to permit the purchasing utility to avoid the need to construct a generating unit, to build a smaller, less expensive plant, or to reduce firm power purchases from another utility, then the rates for such a purchase will be based on the avoided capacity and energy costs.

Small Power Production and Cogeneration Facilities; Regulations Implementing Section 210 of the Public Utility Regulatory Policies Act of 1978, FERC Stats. & Regs., Regs. Preambles 1977-1981 ¶ 30,128 at 30,865 (1980) (emphasis added).

Air Products also argues that the segmenting of bids by resource type is entirely consistent with this Commission's regulations. In support, Air Products cites section 292.304(c)(3)(ii), which gives the states discretion to set "standard rates" that "differentiate among qualifying facilities using various technologies on the basis of the supply characteristics of the different technologies." Air Products also points out that section 292.304(e) of the Commission's regulations directs states, where practicable, to take various non-price factors, including the potential for achieving a "reduction of fossil fuel use," into account when calculating avoided costs.

Oxbow Power Corporation

On January 27, 1995, Oxbow Power Corporation (Oxbow) filed a motion to intervene. Oxbow opposes the petition for enforcement.

Service Systems Energy

On February 2, 1995, Service Systems Energy, Inc. (Service Systems) filed an untimely motion to intervene. Service Systems states that it was a party to the Edison solicitation, but that it was not informed by Edison of the petition for enforcement in a timely manner. Service Systems opposes the petition for enforcement. Service Systems asks that any hearing in this proceeding be used as a forum to address accusations that Edison has violated certain federal and state civil laws.

DOD

On February 8, 1995, the Secretary of Defense (DOD) filed a motion to intervene out-of-time. DOD states that it maintains numerous military installations within the State of California, many of which buy electricity from San Diego and Edison. DOD's annual electric bills are in excess of $61 million to San Diego and $90 million to Edison. DOD wishes to ensure that San Diego and Edison not be required to pay prospective bidders more than the utilities' avoided costs.

Environmental Groups

On February 16, 1995, the Center for Energy Efficiency and Renewable Technologies filed, on behalf of itself and various listed environmental organizations (Environmental Groups), a motion to intervene out-of-time. In an attached letter, Environmental Groups express support for the California program and contend that the petitions for PURPA enforcement seek to undermine the legitimate resource planning efforts of California to quantify the environmental costs associated with electricity production.

EPA

On February 21, 1995, the United States Environmental Protection Agency (EPA) filed a motion to intervene in both dockets. EPA urges the Commission to reject the requests of Edison and San Diego. EPA states that it "believes that environmental values are appropriate considerations in the calculation of avoided costs for purposes of resource procurement by utilities and are clearly a matter of state discretion." EPA states that it would be "inappropriate for the federal government to interfere in what EPA views as fundamentally a state matter."

San Diego's Petition

San Diego states that the California Commission has ordered San Diego to sign long-term, fixed-priced contracts with QFs to purchase 491 MW of new capacity that will come on line in 1997-99. San Diego asserts that these new contracts will require payments above its avoided costs and will dramatically increase stranded costs in a soon-to-be-restructured electric utility industry. San Diego requests this Commission to relieve San Diego and its customers from California Commission orders which it asserts violate both PURPA and this Commission' implementing regulations.

San Diego explains that in April 1992, the California Commission adopted a resource plan specifying four resources for San Diego: 100 MW of geothermal to come on line in 1997, 100 MW of geothermal to come on line in 1998, and 273 MW from the repowering of a two-unit plant. (The difference between the capacity ordered to be solicited and the capacity that resulted from the solicitation results from the application of the California Commission's bidding rules which permit a 10 percent oversubscription.) San Diego states that it requested that non-QFs be permitted to bid in the solicitation along with QFs, that the California Commission denied this request, that it issued its bid solicitation in August 1993, and that it received bids totaling some 3900 MW. San Diego states that, if permitted, it could have selected 590 MW worth of bids at prices (excluding air emissions values and stated in 1998 dollars) of less than 3.85 cents/kWh.

However, according to San Diego, because of the set-aside requirement for renewable resources, and the fragmentation of capacity into separate blocks, San Diego could not simply take the least-costly bids sufficient to meet its needs. Under the California Commission's procedures, San Diego was required to accept the 11th and 18th through the 24th lowest bidders. According to San Diego, instead of having to pay 3.85 cents/kWh for additional capacity, it must pay 6.499 cents/kWh for 55 MW of capacity, 6.1019 cents/kWh for another 50 MW of capacity, and 3.8472 cents/kWh for the repower capacity.

San Diego argues that the California Commission's solicitation procedure violates the avoided-cost standard mandated by PURPA in at least four respects:

> (1) by setting aside certain capacity for bidding solely by non-fossil QFs;
>
> (2) by artificially segmenting the bidding into five separate capacity blocks, thereby precluding acceptance of the least expensive combination of QF bids that would provide the requisite capacity;
>
> (3) by precluding any bidding by non-QFs; and
>
> (4) by requiring additional payments to QFs for computed air-emissions values.

San Diego also argues that because the California Commission proposes to restructure the electric utility industry in California, such that certain retail customers will be able to opt for "direct access", i.e., retail wheeling, it makes no sense to require utilities to commit to the long-term fixed-cost purchase of new generation resources they would have needed under the now-repudiated regulatory compact. San Diego states that where it is not known whether the new generation will be needed, "avoided costs" cannot be calculated in any meaningful manner beyond the very near term.

Notice of San Diego's filing was published in the Federal Register, 60 Fed. Reg. 4909 (1995), with comments, protests or interventions due on or before February 8, 1995.

Responses to San Diego's Petition

The California Commission

On February 8, 1995, the California Commission filed a notice of intervention and protest to Edison's petition for enforcement. The California Commission states that San Diego's petition raises essentially identical issues as the petition filed by Edison. The California Commission states that San Diego's petition suffers from the same maladies as does Edison's

petition. The California Commission's intervention repeats the arguments it made in answer to Edison's petition. 4/

National Independent Energy Producers

On February 8, 1995, NIEP filed a motion to intervene and protest. The NIEP states that it opposes San Diego's petition for the same reasons it opposes Edison's petition.

Independent Energy Producers

On February 8, 1995, IEP filed a motion to intervene, answer and protest to San Diego's filing. IEP states that San Diego's petition is substantially similar to Edison's. IEP states that it differs from Edison's petition in that San Diego does not directly challenge the finding that San Diego needs substantial new capacity. IEP for the most part repeats the arguments it made in response to the Edison petition. IEP states that while the bidding process was not open to non-QF bidders, the benchmark prices established by the California Commission implementation plan reflect "all cost-effective potential generation additions." IEP states that the bidding procedure is consistent with PURPA because it was designed to provide the resources deemed necessary by the CEC to supply state needs.

PG&E

On February 8, 1995, PG&E filed a motion to intervene identical to the one in filed in response to Edison's petition.

Edison

On February 8, 1995, Edison filed a motion to intervene in support of San Diego's petition.

4/ On February 10, 1995, San Diego filed a motion to answer the February 8, 1995 protest of the California Commission in order to respond to various purported mischaracterizations of San Diego's position. On February 21, 1995, the California Commission filed a response to San Diego's February 10 filing. The California Commission states that San Diego's position in this case would preclude renewable QFs from ever being able to sell electricity to a utility again. The California Commission states that renewables cost more on a cents per kilowatt basis than do cogenerators, although renewables posses other benefits that cogenerators lack. The California Commission argues that it has properly implemented PURPA while preserving its own rights to conduct energy resource planning.

US Generating Company and Fellows Generating Company, L.P.

On February 8, 1995, USGen and Fellows filed a joint motion to intervene and protest. USGen and Fellows state that Fellows was awarded approximately 331 MW of "winning bids" in the San Diego solicitation for QF electricity. USGen and Fellows support dismissal of San Diego's petition for the same reasons set forth in their response to Edison's petition.

Electric Generation Association

On February 8, 1995, EGA moved to intervene. EGA requests that the Commission dismiss San Diego's petition for essentially the same reasons it requests that Edison's petition be dismissed.

Santa Fe Energy Resources, Inc.

On February 8, 1995, Santa Fe filed a motion to intervene in opposition to San Diego's petition. Santa Fe repeats the arguments it made in opposition to Edison's petition.

NARUC

On February 8, 1995, NARUC filed a motion to intervene, requesting that San Diego's petition be denied for the same reasons it asks that Edison's petition be denied.

Edison Electric Institute

On February 8, 1995, EEI moved to intervene in support of the petition filed by San Diego for the same reasons its supports Edison's petition.

Niagara Mohawk Power Corporation

On February 8, 1995, Niagara Mohawk filed a motion to intervene in support of San Diego's petition for enforcement.

National Coal Association and Western Fuels Association

On February 8, 1995, the Fuel Associations moved to intervene in support of San Diego's petition stating that the issues raised by San Diego are the same as those raised by Edison and that they support San Diego's petition for the same reasons they support Edison's.

Seawest Energy Corporation

On February 8, 1995, Seawest filed a motion to intervene opposing San Diego's petition.

Zond Systems, Inc.

On February 8, 1995, Zond and American Wind filed motions to intervene and a joint protest opposing San Diego's petition.

DOE

On February 8, 1995, DOE filed a notice of intervention without raising any substantive issues.

Southern California Gas Company

On February 8, 1995, SoCalGas filed a motion to intervene without raising any substantive issues.

Magma Power Company

On February 8, 1995, Magma filed a motion to intervene. Magma opposes San Diego's petition and concurs in and supports the comments filed by IEP.

Air Products and Chemicals, Inc.

On February 8, 1995, as supplemented on February 16, 1995, Air Products filed a motion to intervene and protest opposing San Diego's petition for the same reasons it opposes Edison's petition.

Tucson Electric Power Company

On February 8, 1995, Tucson Electric Power Company (Tucson Electric) filed a motion to intervene.

DOD

On February 8, 1995, DOD filed a motion to intervene. DOD states that it maintains numerous military installations within the State of California many of which buy electricity from San Diego and Edison. DOD's annual electric bills are in excess of $61 million to San Diego and $90 million to Edison. DOD states that it is San Diego's second largest customer. DOD wishes to ensure that San Diego and Edison not be required to pay prospective bidders more than the utilities' avoided costs.

Public Service Company of New Mexico

On February 8, 1995, Public Service Company of New Mexico (PNM) filed a motion to intervene. PNM states that it sells 100 MW of firm power to San Diego under a long-term contract. PNM also makes economy energy and other spot market sales to the electric utilities serving California. PNM states that it is concerned with the development of fair, even-handed and equitable rules which will permit utilities to compete vigorously in an increasingly deregulated marketplace. PNM does not believe that QFs should be artificially favored as electricity suppliers.

Additional Interventions in Support

The following entities, which represent that they are customers of San Diego, have filed timely motions to intervene in support of San Diego's petition: Scripps Institutions of Medicine and Science, San Diego Economic Development Corporation, Foodmaker, Inc., General Atomics, Hughes Network Systems, San Diego County Hotel-Motel Association, the Southland Corporation, the United States Postal Service, San Diego Ice Arena, Qualcomm, Incorporated, the University of California, San Diego, Rohr Industries, Inc., Sweetwater Union High School District, San Diego State University, Sony Engineering & Manufacturing of America, Utilities Consumers' Action Network, and National Steel and Shipbuilding Company. In addition, on February 17, 1995, San Diego Unified Port District filed a motion for late intervention.

Members of Congress

On February 13, 1995, Congressmen Brian Bilbray, Ron Packard, Randy "Duke" Cunningham, and Bob Filner filed comments in support of San Diego's petition. The Congressmen state that on the eve of the deregulation of the electric industry, utilities and their customers should not be forced to pay additional costs that inhibit the transition to a competitive marketplace. They believe that the California Commission's decision ordering the California utilities to purchase long-term, above-market-priced power seriously undermines competition. The Congressmen state that the Commission is uniquely positioned to act quickly and decisively to enjoin the California Commission's proceedings in conformance with PURPA.

On February 17, 1995, Congressman Duncan Hunter filed comments questioning the need for the Commission's involvement "in a clearly state-based decision" and asking that the Commission deny Edison's and San Diego's petitions for enforcement.

On February 21, 1995, Congressman Charles Wilson filed comments in opposition to Edison's and San Diego's petitions.

Congressman Wilson states that "[n]othing in PURPA gives FERC the power to second-guess states when calculating avoided costs or states findings that rates are at or below avoided costs." The Congressman urges the Commission "not to issue a drastic change in policy and thus change in midstream policy upon which states, industry, and the American people have come to rely."

On February 21, 1995, Assemblyman Byron Sher of the California Legislature filed comments in opposition to Edison's and San Diego's petitions. Assemblyman Sher states that "it would be a serious mistake for the [Commission] to second-guess California's actions in this regard and preclude parties from proceeding with their low-cost, clean energy projects."

Environmental Groups

On February 16, 1995, Environmental Groups filed a motion to intervene out-of-time. Environmental Groups attach the same letter in support of the California program as that attached to their motion to intervene in Docket No. EL95-16-000.

Discussion

Pursuant to Rule 214 of the Commission's Rules of Practice and Procedure, 18 C.F.R. § 385.214 (1994), the notices of intervention filed by the California Commission and DOE serve to make them parties to the proceedings in Docket Nos. EL95-16-000 and EL95-19-000. Additionally, the timely, unopposed motions to intervene summarized above serve to make the entities which filed the motions parties to the proceedings in Docket Nos. EL95-16-000 and EL95-19-000. Further, we find good cause to grant all of the motions to intervene out-of-time in the proceedings in Docket Nos. EL95-16-000 and EL95-19-000, and will consider all supplemental pleadings, in light of the interests they raise and in order to complete all of the arguments of the parties.

Preliminary Observations

Before addressing the merits of Edison's and San Diego's petitions, we believe that some preliminary observations are in order to provide a better understanding of the action we take today.

When Congress enacted PURPA in 1978, there was very little non-utility generation. In 1978 virtually all new generating capacity was provided by traditional electric utilities. In fact, one of the principal reasons Congress adopted section 210 of PURPA was because electric utilities had refused to purchase power from non-utility producers. 5/ In contrast to 1978, non-traditional producers, including QFs, now provide well in excess of half of all new generating resources, and the Commission has determined that there is no longer any dominance in the provision of new generating capacity. 6/

One of the reasons for the dramatic growth of the QF industry was the Commission's policy decision in 1980 to set the maximum rate permissible under PURPA section 210(b), i.e., a full avoided cost rate. 7/ While such rates do not result in direct benefits to ratepayers, 8/ they nevertheless are fully consistent with PURPA section 210(b)'s requirement that the rates be just and reasonable to ratepayers and in the public interest. 9/ Nevertheless, PURPA does not permit either the Commission, or the States in their implementation of PURPA, to require a purchase rate that exceeds avoided cost. 10/

Since 1980, the Commission has given the States wide latitude in implementing PURPA. 11/ We have done so partly in

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5/ See FERC v. Mississippi, et al., 456 U.S. 742, 750 (1982).

6/ Kansas City Power & Light Company, 67 FERC ¶ 61,183 (1994).

7/ See American Paper Institute, Inc. v. American Electric Power Service Corp., et al., 461 U.S. 402, 406-07 (1983).

8/ The Commission found that QFs paid full avoided cost rates would nevertheless benefit ratepayers by decreasing reliance on scarce fossil fuels and resulting in the more efficient use of energy.

9/ 461 U.S. at 413 ("The Commission plainly has the authority to adopt a full-avoided-cost rule, for PURPA sets full avoided cost as the maximum rate that the Commission may prescribe.")

10/ 461 U.S. at 413; Connecticut Light and Power Company, 70 FERC ¶ 61,102 (1995), reh'g pending.

11/ See, e.g., American REF-FUEL Company of Hempstead, 47 FERC ¶ 61,161 at 61,533 (1989), where the Commission stated:

> [S]tates are allowed a wide degree of latitude in establishing an implementation plan for section 210 of PURPA, as long as such plans are consistent with our regulations. Similarly, with regard to review and enforcement of avoided cost determinations under such implementation plans, we

(continued...)

recognition of the important role which Congress intended to give the States under PURPA, 12/ as well as to avoid unnecessary interference with state efforts to maximize the development of QFs. However, as noted above, the QF industry is now a developed industry and the need for integration of policy objectives under PURPA and other federal electric regulatory policies is pronounced. This is particularly the case given the fact that the electric utility industry is in the midst of a transition to a competitive wholesale power market, and some States, including California, are considering direct access for retail customers.

As the electric utility industry becomes increasingly competitive, 13/ the need to ensure that the States are using procedures which ensure that QF rates do not exceed avoided cost becomes more critical. This is because QF rates that exceed avoided cost will, by definition, give QFs an unfair advantage over other market participants (non-QFs). 14/ This, in turn, will hinder the development of competitive markets and hurt ratepayers, a result clearly at odds with ensuring the just and reasonable rates required by PURPA section 210(b).

We believe it is incumbent upon regulators, Federal and State, to avoid the creation of transition costs where possible. California's decision to consider a major restructuring of its retail electricity market significantly heightens our concern with stranded costs arising from above-

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11/(...continued)

> have said that our role is generally limited to ensuring that the plans are consistent with section 210 of PURPA. . . .

See also LG&E-Westmoreland Hopewell, 62 FERC ¶ 61,098 at 61,712 (1993).

12/ See FERC v. Mississippi, 456 U.S. at 742 (In PURPA, the Federal Government uses State regulatory machinery to advance Federal goals). See also PURPA section 210(e) (requiring consultation with State regulatory authorities).

13/ The California Commission has recently initiated its Blue Book proceeding which is aimed at injecting much more competition in its retail market.

14/ Congress gave QFs certain benefits: the right to interconnect, to sell power to electric utilities at avoided cost and to purchase back-up power, etc. from electric utilities at non-discriminatory prices. However, Congress did not intend QFs to have any rate benefit above a market rate level.

avoided-cost rates. We believe it is inconsistent with our obligation under PURPA to ensure just and reasonable rates, and our goals to encourage development of competitive bulk power markets, to permit the use of PURPA to create new contracts that do not reflect market conditions for new bulk power supplies.

Finally, in acting today, we acknowledge California's ability under its authorities over the electric utilities subject to its jurisdiction to favor particular generation technologies over others. We respect the fact that resource planning and resource decisions are the prerogative of state commissions and that states may wish to diversify their generation mix to meet environmental goals in a variety of ways. Our decision today does not, for example, preclude the possibility that, in setting an avoided cost rate, a state may account for environmental costs of all fuel sources included in an all source determination of avoided cost. Also, under state authority, a state may choose to require a utility to construct generation capacity of a preferred technology or to purchase power from the supplier of a particular type of resource. The recovery of costs of utility-constructed generation would be regulated by the state. The rates for wholesale sales would be regulated by this Commission on a cost-of-service or market-based rate basis, as appropriate. Our decision here simply makes clear that the State can pursue its policy choices concerning particular generation technologies consistent with the requirements of PURPA and our regulations, so long as such action does not result in rates above avoided cost. 15/

15/ Section 292.304(c)(3)(ii) of the Commission's regulations allows states in setting standard rates for purchases to differentiate among various technologies on the basis of the supply characteristics of such technologies. However, the preceding subsection (section 292.304(c)(3)(i)) requires that any such differentiation by technologies "be consistent with" paragraph (a) of this section, which, as explained above, does not require any purchasing utility to pay more than its avoided cost. Moreover, the Commission in its preamble discussion indicated that standard rates for purchases from QFs with a design capacity of: (a) 100 kW or less [292.304 (c)(1)]; or (b) more than 100 kW [292.304(c)(2)] must be set equal to the utility's "avoided cost pursuant to paragraphs (a), (b) and (e)." Small Power Production and Cogeneration Facilities; Regulations Implementing Section 210 of the Public Utility Regulatory Policy Act of 1978, Order No. 69, 45 Fed. Reg. 12214, 12223 (1980).

Commission Response

Edison and San Diego have asked this Commission to declare that the California Commission orders at issue are in conflict with PURPA and this Commission's implementing regulations because the orders require the utilities to purchase from QFs at rates in excess of their avoided costs. Their reasons include the fact that the California solicitations brought in bids from cogeneration facilities at prices below what was awarded for some renewable capacity; that portions of the solicitations were set aside for renewable bidders; that the bids were segmented into separate capacity blocks; that bid prices are distorted by adders or subtracters to reflect environmental externalities; that the final orders ignore updated need projections; that the solicitations were not open to non-QF bidders; and that the orders may result in stranded costs in a restructured electric utility industry. There is no need to address most of Edison's and San Diego's arguments because we find as a threshold matter that the California Commission's method of determining avoided costs is inconsistent with PURPA and our regulations.

While we are reluctant to interfere in California's implementation of PURPA and our regulations, as we explained in Connecticut Light and Power Company, 70 FERC ¶ 61,102 (1995) (CL&P), PURPA expressly directed this Commission, and not the states, to prescribe rules governing QF rates. 16/ PURPA gave the states responsibility for "implement[ing]" the statute and the Commission's rules. 17/ As a result, a state may prescribe a particular per unit charge only if the process it uses to establish the per unit charge is in accordance with the Commission's rules.

16/ 16 U.S.C. §§ 824a-3(a)-(b) (1988).

17/ 16 U.S.C. § 824a-3(f) (1988); accord, FERC v. Mississippi, 456 U.S. 742, 751 (1982); Independent Energy Producers Association v. California Public Utilities Commission, 36 F.3d 848, 856 (9th Cir. 1994); Cogeneration Coalition of America, Inc., 61 FERC ¶ 61,252 at 61,925-26 (1992); Small Power Production and Cogeneration Facilities; Regulations Implementing Section 210 of the Public Utility Regulatory Policies Act of 1978, Order No. 69, 45 Fed. Reg. 12,214 (Feb. 5, 1980), FERC Stats. & Regs., Regulations Preambles 1977-1981 ¶ 30,128 at 30,864 (1980), order on reh'g, Order No. 69-A, 45 Fed. Reg. 33,958 (May 21, 1980), FERC Stats. & Regs., Regulations Preambles 1977-1981 ¶ 30,160 (1980), aff'd in part and vacated in part, American Electric Power Service Corporation v. FERC, 675 F.2d 1226 (D.C. Cir. 1982), rev'd in part, American Paper Institute, Inc. v. American Electric Power Service Corporation, 461 U.S. 402 (1983).

Section 210(b) of PURPA explicitly provides that no Commission rule on QF rates "shall provide for a rate which exceeds the incremental cost to the electric utility of alternative energy." 18/ The "incremental cost of alternative electric energy" is defined in section 210(d) of PURPA as "the cost to the electric utility of the electric energy which, but for the purchase from such cogenerator or small power producer, such utility would generate or purchase from another source." 19/ The Supreme Court stated that PURPA "sets full avoided cost as the maximum rate that the Commission may prescribe." 20/

The Commission's regulations, tracking the statutory language, in turn expressly provide that QF rates must "be just and reasonable to the electric consumer of the electric utility" and "[n]ot discriminate against qualifying cogeneration and small power production facilities," and that "[n]othing in [the Commission's regulations] requires any electric utility to pay more than the avoided cost for purchases." 21/ The Commission's regulations define avoided costs as "the incremental costs to an electric utility of electric energy or capacity or both which, but for the purchase from the qualifying facility or qualifying facilities, such utility would generate itself or purchase from another source." 22/

As pointed out by the California Commission, IEP, and numerous other intervenors, the Commission gives great latitude to state commissions as to procedures selected to determine avoided costs. The Commission has not, and does not intend in the future, to second-guess state regulatory authorities' actual

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18/ 16 U.S.C. § 824a-3(b) (1988); accord, H.R. Rep. No. 1750, 95th Cong., 2d Sess. 98 (1978).

19/ 16 U.S.C. § 824a-3(d) (1988).

20/ American Paper Institute, Inc. v. American Electric Power Service Corporation, 461 U.S. 402, 413 (1983); accord, Independent Energy Producers Association v. California Public Utilities Commission, 36 F.3d at 850 (citing to section 210(b), and stating that "rates may not exceed the incremental cost to the utility of purchasing alternative electric energy").

21/ 18 C.F.R. § 292.304(a)(1)-(2) (1994).

22/ 18 C.F.R. § 292.101(b)(6) (1994); see also FERC Stats. & Regs., Regulations Preambles 1977-1981 at 30,875, 30,877, 30,878, 30,880.

determinations of avoided costs (i.e., whether the per unit charges are no higher than incremental costs). Rather, the Commission believes its role is limited to ensuring the process used to calculate the per unit charge (i.e., implementation) accords with the statute and our regulations.

As noted above, under PURPA an avoided cost (incremental cost) determination must permit QFs to participate in a non-discriminatory fashion and, at the same time, assure that the purchasing utility pays no more than the cost it otherwise would incur to generate the capacity (or energy) itself "or purchase from another source" (the language of section 210 of PURPA, emphasis added). Congress in this language did not in any way limit the sources to be considered. The consequence is that regardless of whether the State regulatory authority determines avoided cost administratively, through competitive solicitation (bidding), or some combination thereof, it must in its process reflect prices available from all sources able to sell to the utility whose avoided cost is being determined. If the state is determining avoided cost by relying on a combination of benchmark and bidding procedures, as here, this means that the bidding cannot be limited to certain sellers (QFs); rather, it must be all-source bidding.

For this reason, we find that the California Commission's process of determining avoided costs did not comply with PURPA. Under the California Commission's procedures, as explained above, a benchmark price was determined for the acquisition of certain capacity. Only QFs were then permitted to bid against the benchmark. Such a procedure could not properly determine avoided costs, 23/ because it excluded potential sources of capacity from which the utilities could purchase, in contravention of the requirements of section 210 of PURPA and our regulations.

Because the California Commission's procedure was unlawful under PURPA, Edison and San Diego cannot lawfully be compelled to enter into contracts resulting from that procedure. At this juncture, there are no executed contracts. However, in order to avoid parties spending further time and resources in pursuing contracts that would be unlawful under PURPA, we believe it would be appropriate for the California Commission to stay its requirements directing Edison and San Diego to purchase pending the outcome of further administrative procedures in accordance

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23/ We do not reach the factual question of whether the prices determined in the California process, i.e., the per unit charges, are in fact higher than the prices that would have been determined had the process permitted all sources, QF and non-QF, including the utilities themselves, to bid.

with PURPA. We also encourage the utilities and QFs to reach a settlement that would be consistent with PURPA.

Finally, based on the record before us at this time, we have grave concerns about the need for this capacity and the staleness of the data relied upon by the California Commission. Because we are deciding these cases on other grounds, we do not need to reach a definitive conclusion on these issues.

Applicability of Decision

Many other states now also use some sort of bidding procedure to establish avoided cost. We do not know whether these states engage in all-source bidding procedures, or whether they, as California, limit bidding to QFs. However, we do not believe it would be in the public interest to invalidate the QF contracts that have resulted from prior solicitations in California or elsewhere that have not been challenged and are pending. Consistent with our recent order in CL&P, we will not entertain requests to invalidate preexisting contracts in which avoided costs were established pursuant to a state bidding procedure that did not allow all-source bidding unless such issue has been raised and is pending or is raised in a timely appeal of a state decision. We believe that the appropriate time in which to challenge a state-imposed rate for a QF purchase is up to the time the purchase contract is signed, not years into a contract.

The Commission orders:

Edison's and San Diego's petitions for enforcement are hereby granted to the extent discussed above.

By the Commission. Commissioner Massey concurred with a separate statement attached.

(S E A L)

Lois D. Cashell,
Secretary.

Southern California Edison Company) Docket No. EL95-16-000
)
San Diego Gas & Electric Company) Docket No. EL95-19-000

(Issued February 23, 1995)

MASSEY, Commissioner, concurring:

I concur in today's order. My concurrence is driven by essentially two factors. First, as competition emerges, the QF contracts at issue here would increase the amount of stranded costs ultimately borne by the utilities' ratepayers and/or shareholders. That is a step in the wrong direction. Stranded cost is the central issue in the debate over the future structure of the electric industry and it is time for regulators, federal and state, to face it squarely and boldly. We need to find ways to reduce, not increase, the industry's potential stranded cost problems.

Second, in today's wholesale market, QFs should compete head-on with other power suppliers. The power supply industry has become much more competitive since the enactment of PURPA. PURPA has been a success in this respect. The QF industry has matured sufficiently that QFs can and should compete on the merits with other supply options. QFs can, for example, often assist utilities to meet long-term environmental compliance requirements, and I believe the market and state regulators can recognize and integrate the value of such assistance in the all-source determination process.

Our order stands for two principles. First, while avoided costs may be determined administratively, through bidding or some combination thereof, the determination must consider prices available from all sources able to sell to the affected utility. Thus, our order does not preclude administrative determinations of avoided costs, so long as all sources are considered.
I believe bidding may be the best way for states to comply with PURPA, but it is not the only way. Second, if avoided costs are determined through a combination of bidding and benchmark procedures, the bidding phase must be open to all sources, not just QFs. The parties addressed many other issues but, beyond establishing these two principles, we do not resolve those issues in this order.

I want to underscore that our decision today does not preclude states from considering environmental costs in determining avoided costs under PURPA. The order expressly leaves open the possibility that states may account for the environmental costs of all fuel sources included in an all-source determination. The order also says that states can pursue their policy choices concerning particular generation technologies consistent with PURPA and our regulations, so long as such action does not result in rates above avoided cost. Indeed, a primary purpose of PURPA is to encourage the development of alternative generation, including non-fossil generation, and today's order must be read with that in mind.

The consideration of environmental costs and other non-price factors under PURPA is consistent with a recent amendment to PURPA. In the Energy Policy Act of 1992, Congress amended PURPA to require states to consider mandating the use of "integrated resource planning." 1/ The amendment of PURPA to include this requirement supports construing PURPA's avoided cost standard as allowing consideration of the non-price factors essential to integrated resource planning.

The consideration of environmental costs and other non-price factors under PURPA is also consistent with this Commission's past statements. In proposing procedures in 1988 to allow bidding under PURPA, the Commission stated:

> Terms and conditions for electricity production and delivery cannot be described by a single facet of the sale, such as price. Rather, a variety of factors which affect the continued security and operational integrity of the purchasing utility's system, including fuel diversity and reliability, must be taken into consideration in selecting purchases. Congress was aware that many attributes need to be taken into account in determining the value of purchases from QFs. [2/]

The Commission also stated then that one permissible way to rank bids under PURPA would be based on price alone, but "there are severe drawbacks to focusing solely on price because of the multiple attributes of electricity." 3/ The Commission stated: "It is precisely for this reason that this rulemaking proposes to condition the use of bidding on nonprice factors being taken into account in the selection of winning bids." 4/ While the Commission has since terminated the 1988 rulemaking, the Commission has never disavowed its interpretation of PURPA as allowing consideration of nonprice factors, and does not do so in today's order.

1/ 16 U.S.C. § 2621(d)(7) (West Supp. 1994).

2/ Regulations Governing Bidding Programs, IV FERC Stats. and Regs. para. 32,455 at p. 32,034 (1988), terminated, 64 FERC 61,364 (1993).

3/ Id. at 32,040.

4/ Id. at 32,040 n.98.

One shortcoming I see in today's order is the lack of guidance to the states on how to determine avoided costs. We tell California they did it wrong. But we offer little guidance on how to do it right. I support opening a generic proceeding, to elicit input from all interested parties and to explore fully how PURPA should work in a competitive power supply industry. One of PURPA's primary goals is to encourage the development of alternative fuel generation such as geothermal, wind power and others. As long as PURPA is the law of the land, we owe it to the state regulators, the QFs and the utilities to provide additional guidance with respect to how PURPA's goals can be accomplished in a competitive era.

In hindsight, the Commission should have initiated a generic proceeding sooner. If we had, perhaps we could have avoided the surprise that some will argue we are imposing today. We should flesh out a number of issues by rulemaking to give the states guidance on how to implement PURPA in a lawful manner. Providing such guidance will help to ensure that this Commission is not regularly called upon to second-guess state decisions under PURPA.

Finally, our order in no way affects the authority of states to adopt and implement power supply policies outside of PURPA. Our order today construes only the requirements of PURPA, and does not (indeed, could not) purport to limit the authority of states beyond the context of PURPA. Our order says only that states cannot act under PURPA to require utilities to pay more than their avoided costs.

William L. Massey
Commissioner

INTERVENORS IN CALIFORNIA PURPA ENFORCEMENT ACTION

The following parties intervened in either or both of the PURPA enforcement actions initiated in Docket No. EL95-16-000 (Southern California Edison Company) and Docket No. EL95-19-000 (San Diego Gas & Electric Company):

California Public Utilities Commission
National Independent Energy Producers
Independent Energy Producers of New York, Inc.
Independent Energy Producers Association
Pacific Gas and Electric Company
US Generating Company and Fellows Generating Company, L.P.
Electric Generation Association
City of Vernon, California
Santa Fe Energy Resources, Inc.
National Association of Regulatory Utility Commissioners
Edison Electric Institute
Niagara Mohawk Power Corporation
National Coal Association and Western Fuels Association
Seawest Energy Corporation
Zond Systems, Inc.
American Wind Energy Association
United States Department of Energy
United States Department of Defense
United States Environmental Protection Agency
Southern California Gas Company
Magma Power Company
Air Products and Chemicals, Inc.
Oxbow Power Corporation
Service Systems Energy, Inc.
Center for Energy Efficiency and Renewable Technologies
Southern California Edison Company
Tucson Electric Power Company
Public Service Company of New Mexico
Scripps Institutions of Medicine and Science
San Diego Economic Development Corporation
Foodmaker, Inc.
General Atomics
Hughes Network Systems
San Diego County Hotel-Motel Association
Southland Corporation
United States Postal Service
San Diego Ice Arena
Qualcomm, Inc.
University of California, San Diego
Rohr Industries, Inc.
Sweetwater Union High School District

San Diego State University
Sony Engineering & Manufacturing of America
Utilities Consumers' Action Network
National Steel and Shipbuilding Company

The following members of Congress filed comments in response to the PURPA enforcement applications: Brian Bilbray, Ron Packard, Randy "Duke" Cunningham, Bob Filner, Duncan Hunter, and Charles Wilson. In addition, Assemblyman Byron Sher of the California Legislature filed comments in response to the applications.

All interventions and comments are reflected in the Commission's February 23, 1995 order in these proceedings.

Mr. FAZIO. Great. Did you or any of the other commissioners have contact with any of the petitioners or intervenors or any of the other interested parties on this matter before the petition was filed?

Ms. MOLER. Yes, we had contact with all sides, including in some cases discussions in advance with the utilities, the suppliers, the PURPA QF folks, and the CPUC and its staff.

Mr. FAZIO. Could you give that kind of information for the record—the scope of those and the names of the intervenors and others for the record; could you do that?

Ms. MOLER. We would be happy to do that.

Mr. FAZIO. I am not sure you would be happy to, but I would appreciate it anyway.

[The information follows:]

DISCUSSION WITH PARTIES TO CALIFORNIA CASE

Time and resources permitting, Commission personnel regularly meet with electric industry participants to discuss matters that may be filed with the Commission. However, we do so only when there are no contested matters pending involving the issues to be discussed and the parties requesting the meeting. Commission personnel attempt to be available to discuss controversial issues with parties on both sides of an issue. We do not keep records of such meetings.

In this case, Commissioners, their assistants and members of the Commission staff had discussions with one or more of the following parties and/or counsel before the petitions by Southern California Edison Company (Edison) and San Diego Gas & Electric Company (San Diego) were filed: Edison, San Diego, California Public Utilities Commission, Independent Energy Producers Association. The discussions concerned the factual and legal issues surrounding California's BPRU, and issues concerning the Public Utility Regulatory Policies Act of 1978 and the Commission's implementing regulations.

Ms. MOLER. Our regulations allow very free communication until a case is filed. I don't, as a matter of routine, keep track of all of those, nor do our staff, nor do my colleagues.

Mr. FAZIO. I don't want to make it sound as if I am being critical of that. I think there is just some sort of interest in knowing how many different points of view were heard before you started. What action triggers your ex parte rules?

Ms. MOLER. Our ex parte rules apply to contested on-the-record proceedings, so when a case is filed, the communication is—and clearly this was going to be a contested case. That is why they were coming to us. The ex parte rules under Part 385 of our regulations apply when the case is filed.

Mr. FAZIO. So when they are triggered, in effect, what sources of information can you consider to help guide you to your ultimate decision?

Ms. MOLER. We can consider on the record written pleadings, and we did. There is an exception whereby we or the members of our staff are able to communicate about procedural issues. For example, some parties sought an extension of time to file comments.

The CPUC had required Southern California Edison to sign contracts by a certain date. The effect of the extension would have meant that we could not reach a decision prior to that time, so we called counsel for the CPUC to see if they would extend the signing deadline. That is a perfectly kosher exception under the Administrative Procedure Act and our rules. They, by the way, refused to extend the deadline.

Mr. FAZIO. Were there public hearings held?

Ms. MOLER. Because we had a 60-day clock, we did this by a paper hearing process adjudication. As a matter of law, we are not required to hold an on-the-record oral hearing unless there are contested issues of material fact.

Mr. FAZIO. So there weren't opportunities for people to cross-examine parties, to engage in that kind of an effort to bring out points of view in that manner? It was a paper submission concept?

Ms. MOLER. That is correct.

Mr. FAZIO. How did you deal with those parties who wanted to intervene in the process?

Ms. MOLER. They all intervened; they are all parties.

Mr. FAZIO. How were their arguments for and against the petition incorporated into your decision-making process?

Ms. MOLER. For starters, we read them, and I can tell you that I read all of the major, personally, all of the major pleadings in this case, as did my colleagues. We were fully aware of the significance of the case.

It is a very significant issue for us, and we treated it accordingly. All the pleadings are in the record. We try to make our orders and decisions readable so we reproduce what they tell us in very summary form in the actual order, otherwise it would be this long.

Mr. FAZIO. Did people have a chance to comment on other's comments, or did you just simply get one piece of material, one submission from each intervenor and let it go at that?

Ms. MOLER. Because of the 60-day statutory time clock, we did not have time for reply comments. We had comments from the utilities, we had comments in response to that from a large array of parties. We actually had some late-filed comments.

One comment came in at 5:00 on Tuesday before we were scheduled to vote on Wednesday. We read that one, too.

Mr. FAZIO. So in light of this, what sort of evidentiary record did you rely on when you went to reach your decision?

Ms. MOLER. Everything that was filed with the Commission.

Mr. FAZIO. All the filings. Do you have a process for rehearing under the law that you are governed by?

Ms. MOLER. In most cases we do. However, this is under Section 210 of PURPA and is not under the Federal Power Act, and Section 210 does not require us to act on rehearing before the parties are free to go to court. We have discretion to consider any petitions for rehearing, or reconsideration in our jargon, that may be filed, but it is not required as a matter of law under PURPA.

Mr. FAZIO. So did you imply or state at any point that this is the final decision in that regard? Is that something we could deduce?

Ms. MOLER. We gave our opinion that the State violated PURPA as a matter of law, and we explained our theory, why that was true, and the theory was that by not considering all of the sources of power that were available that the State was requiring the utilities to pay more than the avoided cost, which is a term of art under PURPA.

They were requiring them to pay 6.5 cents instead of a significantly lower number that would have occurred had they had bidding by all sources. We then suggested in our order that we hoped that the California Public Utilities Commission would consider settling the case, and we have not, as we have authority to do under PURPA, gone to court yet on the subject.

Mr. FAZIO. They have a right to sue in court?

Ms. MOLER. Utilities have a right to sue in court, yes.

Mr. FAZIO. The PUCs options are what?

Ms. MOLER. We said that this violates PURPA, so the PUC can find some other statutory authority to run an Integrated Resource Planning Program. We were adjudicating the issue under PURPA. They can do that. I am sure that they would have to reopen their record and so forth if they were to proceed under a different statute.

The State can allow the parties to settle, and we have in our record the fact that Southern California Edison, for example, has negotiated private settlements with a number of the parties to pay their development costs, if you will. Obviously, the costs of those private settlements would have to be passed on to someone. The CPUC could entertain those kinds of private settlements and we said so in the order or we could all see each other in district court.

Mr. FAZIO. Does the Commission plan to entertain more of these kinds of petitions?

Ms. MOLER. We are statutorily obligated to deal with the business that comes in the door.

Mr. FAZIO. Do you expect a good deal more since this one may be seen as a precedent-setting one?

Ms. MOLER. We already have petitions pending now under PURPA dealing with other existing PURPA contracts, QF contracts. We have, I believe, two pending today.

Mr. FAZIO. Based on what you have learned in this process, would you make any recommendations for changes in PURPA that might somehow improve the process and the public interest that you try to protect?

Ms. MOLER. If I sit back and look at this case, the question that arises in this case is the extent to which alternative power sources are viable in a competitive power market. The other question that arises that is really not under PURPA, but we believe it is a matter of State law, is the extent to which the State regulatory authorities are going to be willing to subsidize the nontraditional power sources.

They can choose to do that under State law. We were very careful to specify in our order the fact that we didn't wish to intrude on their authority to do that. They, however, cannot do it under PURPA. So I think the question that will arise and presumably it will come to the Congress, and there are certainly people who are urging you already to revisit PURPA is whether PURPA has served its usefulness or whether there should be some sort of subsidy for alternative power sources.

That is what this case is really all about. It is unfortunate that we had to deal with the case after it had gone on so long in California. I recognize that. But that, however, is when they were legally able to come to the Commission under PURPA.

Mr. FAZIO. Well, as you know, there are a great deal of interpretations being made right now based on the decision and the statements made around it. And it seems that there is probably more uncertainty that has been caused at the moment than people had hoped for. Perhaps the ramifications of that are still to be determined by either future decisions or perhaps some legislation, as you have indicated. But is there anything that the Commission could do to bring some resolution to the questions about your role? And could you help reduce that uncertainty with something that perhaps might be seen as a policy statement made by the Commission?

Ms. MOLER. The case is less than two weeks old. It was issued February 23rd. I am sure that lots of people are still digesting its significance. The ball is now in the CPUC's court. They have to decide what they are going to do, and I believe that as we begin to deal with the other PURPA-related cases that are before us, that we will begin to define what we think PURPA means these days and begin to grapple with the concept of PURPA in a competitive environment. That is what is causing the uncertainty.

Mr. FAZIO. It does seem that we do need to legislate to clear up some of the possible inconsistencies in law.

Ms. MOLER. There were—the pleadings in the case will tell you that the utilities, A, do not need to buy the power, and, B, even if they were to buy the power, the way that California structured the bidding process, they are paying significantly more for the power than they would if they bought it on the open market or were able to buy it from all power sources, so there is a major consumer issue that is lurking in this case.

Mr. FAZIO. Consumer versus environment versus the interests of private parties of all sorts, I guess.

Ms. MOLER. That is why it is a difficult case.

Mr. FAZIO. Well, I appreciate your helping me learn more about it and exploring some of the ramifications of it, and I appreciate your testimony today. Thank you.

Ms. MOLER. Thank you.

[Questions and answers for the record, the biography of the witness, and the prepared written statement of the witness follow:]

QUESTIONS FOR THE RECORD OF MARCH 3, 1995 FERC BUDGET HEARING

ROLE OF THE COMMISSION

Mr. Myers. How is the role of the Federal Energy Regulatory Commission changing as natural gas and electric power industries are becoming more competitive?

Ms. Moler. The Commission is aggressively pursuing policies to make the natural gas and electric industries more competitive. The Commission's role will change as those policies succeed and the industries it regulates become more competitive. Increasingly, the Commission's approach to regulation will be more of an oversight and monitoring role. This should limit the number of litigated cases, and therefore lower costs to the industries we regulate. At the same time, many of the filings before the Commission will present new and complex issues to resolve. For example, the Commission has received and dealt with a number of filings for market-based natural gas storage rates. The Commission is in the process of developing criteria that it will apply to all market-based pricing filings.

Mr. Myers. As competition in energy markets matures, will the FERC have to redefine its fundamental mission?

Ms. Moler. Although competition is maturing in certain markets, FERC's fundamental role to protect the public from abuse of market power remains an important one in other areas. Certain industry segments, such as gas production or electric generation, are competitive. However, other sectors of the same industries, such as natural gas transportation and electric transmission, retain substantial aspects of monopoly power. The public needs regulatory protection to guard against abuses of market power in these sectors. In addition, the Commission has a continuing environmental obligation in both the natural gas pipeline certification and hydropower licensing areas.

Mr. Myers. Will the FERC become obsolete in the foreseeable future?

Ms. Moler. The Commission's goal is to find ways to regulate electric utilities and natural gas and oil pipelines effectively in order to protect ratepayers while working with, rather than against, competitive commodity markets. Thus, the FERC will not become obsolete, and will have a continuing role to play now and into the foreseeable future.

DEREGULATION IMPACT ON FUTURE BUDGET REQUESTS

Mr. Myers. Do you expect your budget requests to decline in the future as the need for hands-on regulation is reduced?

Ms. Moler. FY 1996 was a unique year for the Commission. We took a hard look at the real cost of operations and cut our administrative costs where we could and, as a result, identified total FY 1996 funding requirements that are 9 percent lower than our FY 1995 appropriation. Further, we applied $15 million of unobligated balances to reduce our request for new funding by a total of $30 million from FY 1995.

While we do not foresee such large decreases in the future, we will attempt to hold costs down to the fullest extent possible without jeopardizing the Commission's missions and goals, allowing only minimal adjustments for pay raises and other fixed cost increases. We will also continue to streamline regulatory and administrative processes with an eye toward further staffing reductions, reflecting our commitment to the Administration's initiative to decrease the size of the Federal workforce.

On the other hand, however, many changes are rapidly taking place in the electric power industry which may influence the staffing and funding requirements of the Commission in the next few years. Since we are still in the first stages of restructuring the electric industry, we cannot identify the impact of these changes at this time.

HEADQUARTERS RELOCATION

Mr. Myers. Congress appropriated $15.8 million in 1992 to pay for relocation of the Commission's headquarters to a new building. When do you plan to begin moving?

Ms. Moler. We currently plan to begin moving the first weekend in October 1995. We will move approximately 150 people each week. The final move is expected mid-December 1995.

Mr. Myers. Are you requesting any additional funds for your move as part of the FY 1996 request or in future years?

Ms. Moler. No additional funds were requested for the headquarters relocation in FY 1996, nor will any funds for this purpose be requested in future years.

CARRYOVER BALANCES

Mr. Myers. The Subcommittee understands that the Commission expects to have a carryover balance of approximately $31 million at the end of FY 1995. What is the explanation for this large carryover?

Ms. Moler. Discernible growth in carryover (other than consolidation funds) occurred in FY 1994 and is projected for FY 1995 due to lower payroll costs and some administrative support savings. Prior to FY 1994, unobligated authority was not a significant percentage of our budget and was considered to be both reasonable and manageable within the scope of the total funding requirements for the Commission.

We budgeted for pay raises for both FY 1994 and FY 1995, in accordance with the law, and this money was appropriated. Savings in salary costs resulted from the cancellation of the 1994 general pay raise and reduction of the FY 1995 pay raise. At the same time, we were negotiating reduced FTE ceilings with OMB and DOE; as a result, we imposed a hiring freeze which prevented our programs from hiring to ceiling. In line with the Administration's goal to reduce Federal employment levels, we continue to take a conservative approach to overall staffing levels. These factors, in large part, contributed to identifying a potential $10 million "savings" — although not yet fully realized — in operating requirements for FY 1995.

Additional savings have been realized in the area of automation and can be attributed to delays both in developing the Commission's automation goals and in identifying hardware requirements to accomplish those goals. Speedy technological advances in the ADP and connectivity arenas precipitated several updates to the Commission's automation plan before we could even begin to purchase equipment. These same rapid advances and market demand resulted in price reductions for equipment, thus increasing the Commission's unobligated balances.

Mr. Myers. How does the Commission plan to reduce the size of its carryover balances in the future?

Ms. Moler. When we formulated the FY 1996 budget, we proposed applying $15 million of the unobligated balance to lower our budget request because that was all we could be certain of at the time. We felt it was prudent to wait until savings from the balance of FY 1994 and from FY 1995 were actually realized before committing them, which we plan to do over the next 2 years by reducing our request for new funding. However, an option for accelerating the plan would be to apply the full balance in FY 1997, thereby eliminating all unobligated funds by the end of FY 1997.

CASELOAD MANAGEMENT AND STREAMLINING

Mr. Myers. What steps has the Commission taken to improve the management of its caseload?

Ms. Moler. Primarily, enhanced technology and use of alternative dispute resolution (ADR) methods. Our automation goal is to give staff the hardware, software, and electronic access to the information they need to meet the complex, time-sensitive processing requirements of market-based regulation. Our agency-wide local area network (LAN) allows staff better and faster retrieval of information regarding the status of cases pending before the Commission by speeding up communications, thus avoiding delays and other problems which affect case processing.

The Commission uses ADR techniques which have proven to be a valuable alternative to protracted and expensive litigation; we routinely review our caseload for ADR opportunities. Further, we welcomed the passage of P.L. 101-552, the Administrative Dispute Resolution Act, as a useful supplement to our own various dispute resolution procedures. We hope to issue a final rule this spring for integrating ADR techniques into the Commission's other dispute resolution procedures.

We have also reduced the time it takes to process applications through outreach programs, training sessions, revised filing and information requirements, and availability of third-party contracting options.

Mr. Myers. How have you streamlined your regulatory procedures to relieve the burden of regulation on jurisdictional industries?

Ms. Moler. I have four examples that have taken place in just the past 3 months. Three have to do with natural gas and one with electric power regulation. They are specific examples of our continuing effort to streamline our regulations and reduce the regulatory burden we impose.

RM 95-5, Release of Firm Capacity on Interstate Natural Gas Pipelines, is a proposed rule which we issued on January 12, 1995. This involves a requirement for pipelines to make postings to an electronic bulletin board if they have unneeded capacity; we are proposing to reduce this requirement by 50 percent.

RM 95-4, Proposed Revisions to the Uniform System of Accounts, Forms, Statements and Reporting Requirements for Natural Gas Companies, was issued in December 1994. In this rule, we are proposing to revise and delete portions of the Uniform System of Accounts to reflect different accounting treatment for unbundled natural gas transportation services.

RM 95-3, Filing and Reporting for Interstate Natural Gas Company Rate Schedules and Tariffs, was also issued in December 1994. The objective of this rule is to update the filing and reporting requirements to reflect restructured services, streamline the processing of rate cases, and remove outdated regulations.

Finally, in the electric area, we issued a final rule on January 13, 1995. RM 92-12, Streamlining of Regulations Pertaining to Parts II and III of the Federal Power Act and the Public Utility Regulatory Policies Act of 1978, revised and clarified procedures and technical rules for qualifying facilities based on our experience with this program. We adopted a standardized application form which eliminated duplication and we cross-referenced it to our regulations, and we simplified procedures under Part 204 of the FPA regarding the issuance of securities in certain circumstances.

Mr. Myers. In which areas is your workload increasing and where is it decreasing?

Ms. Moler. As the chart on page 12 of our budget request shows, the workload numbers in the natural gas program are expected to decline significantly. This is due to the elimination of about 6,700 filings for pipeline transportation transactions.

Total workload in the hydropower program shows a slight increase in FY 1996, although we estimate that the workload pending at the end of FY 1996 will remain stable. Of significant importance in the hydropower program is that by the end of 1996, we expect to have completed all the 157 relicensing cases whose licenses expired at the end of 1993. This is no small accomplishment given the fact that they were all filed at the same time and all needed some kind of environmental review.

Workload in the electric power program, while relatively stable, remains at a high level compared to the levels of just a few years ago.

I must point out that, while the above paragraphs provide an accurate recap of quantifiable — or what we call traditional — workload, the nature of the Commission's work is shifting toward undocketed procedures such as outreach, monitoring efforts, and development of new policies for the competitive era. Complexity has also been added to some aspects of the traditional workload. For example, we expect to receive more filings involving issues deferred in restructuring proceedings. These cases will be difficult to resolve and more time-consuming because of the new issues presented and lack of precedent available on which to base decisions.

THIRD-PARTY CONTRACTING

Mr. Myers. To what extent have applicants for hydropower licenses and natural gas pipeline construction certificates taken advantage of the Commission's third-party contracting program, which permits payments to contractors to prepare the required environmental review documents?

Ms. Moler. In the Commission's hydroelectric program, five developers have elected to use third-party contracting for the Commission's environmental document. Four of these cases involve proposed pumped storage projects, and are listed below:

Lorella Project (Oregon)
Boulder Valley Project (California)
Blue Diamond Project (Nevada)
Sheep Mountain Project (Nevada)

Draft environmental impact statements (EIS) are being prepared for Boulder Valley, Blue Diamond, and Sheep Mountain. The Lorella project encountered financial difficulties that resulted in termination of the third-party contract before an EIS was completed. The required environmental document will now be prepared by the Commission staff or the Commission's contractor.

Also, in the context of a license amendment proceeding, the Commission staff has completed a draft environmental assessment using third-party contracting for transmission line construction associated with the Belleville Project in West Virginia and Ohio.

At this time, we know of five other prospective developers of new hydroelectric projects or licensees for existing projects who are considering using third party contracting.

In the natural gas pipeline area, two applicants, Mojave Pipeline Company and Tuscarora Gas Transmission Company, have participated in the third-party contractor program. In addition, third party contracting plans are under discussion for two other natural gas projects: Sunshine Interstate Gas Transmission's pipeline project through Alabama, Florida, and Mississippi, and EcoElectrica's liquefied natural gas-fired cogeneration project in Puerto Rico.

ADMINISTRATIVE DISPUTE RESOLUTION

Mr. Myers. What steps has FERC taken to establish administrative dispute resolution procedures under the 1990 Administrative Dispute Resolution Act? Is progress being made in the utilization of ADR as an alternative to protracted and expensive litigation?

Ms. Moler. The underlying purpose of the 1990 Administrative Dispute Resolution Act (ADR Act), to help litigating parties reach a fair, workable settlement and avoid extended litigation, has always been an important priority of the Commission. In a typical year, approximately 70 to 80 percent of all proceedings set for hearing at the Commission are settled. The Commission therefore enthusiastically supports and is implementing the ADR Act.

Shortly after passage of the ADR Act, the Commission appointed its dispute resolution specialist. In April 1991, the Commission issued a Notice of Inquiry (NOI) seeking comments on whether and how to integrate ADR techniques into the Commission's existing dispute resolution procedures.

In November 1994, the Commission issued a Notice of Proposed Rulemaking that strongly endorsed use of alternative dispute resolution methods in the Commission's proceedings and proposed to add specific ADR provisions to its Rules of Practice and Procedure. The Commission expects to issue a final rule this Spring.

The Commission is attempting to use ADR techniques whenever practicable. These techniques include: conciliation, facilitation, mediation, fact finding, and mini-trial.

Use of ADR techniques, of course, requires the consent and motivation of the parties. Our Administrative Law Judges advise parties early in litigation of the availability of settlement judges and ADR techniques. They encourage the parties to use these facilities if the parties believe they could reasonably lead to a full or partial settlement of the issues in controversy. The Commission's trial staff likewise not only encourages use of ADR techniques whenever it appears possible that its use would be fruitful, but also employs several ADR techniques that help facilitate settlement.

The Commission also has taken other steps consistent with the ADR Act. Under the new oil pipeline regulations, which went into effect in January 1995, all protested rate filings will be sent initially to a Settlement Judge to attempt a negotiated resolution.

In addition, the Commission's administrative law judges, supervisory trial attorneys, and other attorneys receive training in the use of ADR on a periodic basis.

Finally, a current ongoing settlement process that is novel involves the New Don Pedro hydroelectric project. For the first time, the Commission hired mediators from the Federal Mediation and Conciliation Service. The mediators are conducting a series of settlement sessions with irrigation districts, the City of San Francisco, state and federal agencies, and a number of environmental groups to resolve a long-running dispute over water flows in the State of California.

INTERVENOR FUNDING

Mr. Myers. Has the Commission funded any intervenors in its regulatory or adjudicatory proceedings in the past or current fiscal year?

Ms. Moler. The Commission has not paid costs of intervenors in its regulatory or adjudicatory proceedings in FY 1992, FY 1993, FY 1994, or FY 1995.

The Equal Access to Justice Act ("EAJA") provides that attorneys' fees and other expenses shall be paid by an agency, in specific circumstances, "from any funds made available to the agency to appropriation or otherwise." Section 502 of the FY 1993 Energy and Water Development Appropriations Act, Pub. L. No. 102-377, permanently provides that "None of the funds in this Act or subsequent Energy and Development Appropriations shall be used to pay the expenses of, or otherwise compensate, parties intervening in regulatory or adjudicatory proceedings funded in such Acts." The Commission has taken the position that taxpayers should not subsidize intervenor actions.

Prevailing parties who are not intervenors may seek reimbursement of attorneys' fees and costs under EAJA related to appeals from Commission orders. In the past, the Commission has successfully argued that it need not pay costs or fees because the petitioning party or parties have not satisfied EAJA's statutory criteria.

There were no challenges brought against the Commission under EAJA during the past year.

ELECTRIC POWER RULEMAKING

Mr. Myers. The Subcommittee understands that FERC is examining a number of critical issues for the electric utility industry, many of which related to provisions of the Energy Policy Act of 1992. We further understand that the Commission is considering the issuance of a broad-based Notice of Proposed Rulemaking to confront may of these outstanding issues. Exactly what issues does the Commission expect to address in this NOPR and what is the timeline for its consideration? To what extent will the NOPR resolve or address the important issues of stranded cost investment, transmission access, and pricing?

Ms. Moler. The Commission expects to issue a Notice of Proposed Rulemaking this Spring to address issues concerning the provision of non-discriminatory open access wholesale transmission services by public utilities. The Commission has to date been addressing these issues on a case-by-case basis.

I can assure you that any decision the Commission makes requiring non-discriminatory transmission access will address stranded cost investment issues.

Finally, I do not expect the Commission to address transmission pricing issues in the rulemaking proceeding since the Commission issued a Policy Statement on transmission pricing on October 26, 1994.

REGIONAL TRANSMISSION GROUPS

Mr. Myers. The Subcommittee notes that the Commission has been generally supportive of the concept of regional transmission groups. RTGs have the potential to provide for the collaborative resolution of transmission access issues by parties directly affected by the new open access rules. What is the status of regional efforts to establish RTGs? Is the Commission currently considering applications for formal recognition of such groups?

Ms. Moler. In a policy statement regarding Regional Transmission Groups issued on July 30, 1993, the Commission announced a general policy of encouraging the development of RTGs. On October 27, 1994, the Commission conditionally approved the RTG filings submitted by the Western Regional Transmission Association (WRTA) and the Southwest Regional Transmission Association (SWRTA). WRTA and SWRTA both have indicated general willingness to meet the conditions imposed by the Commission. A third group, the Northwest Regional Transmission Association (NWRTA), made its initial filing in October 1994. Following issuance of the Commission's WRTA and SWRTA orders, NWRTA asked the Commission to defer action on its filing to allow it time to submit an amended application. While it is my understanding that other groups may be considering seeking RTG status, no other RTG applications are pending before the Commission at this time. The Commission continues to support the formation of RTGs and will continue to encourage parties to use RTGs to resolve transmission issues in the future.

CALIFORNIA PURPA ENFORCEMENT ACTION

Mr. Myers. The Subcommittee is aware of the Commission's decision last week invalidating the California Public Utility Commission's program for the implementation of the Public Utility Regulatory Policies Act. In its decision, the Commission emphasized the increasing competitiveness of the electric utility industry and ruled that all potential sources of electric capacity must be considered in the determination of "avoided costs" in purchasing independently produced power. Do you anticipate future decisions generally interpreting the application and scope of PURPA?

Ms. Moler. Although we cannot estimate how many PURPA interpretation matters will be brought to the Commission for its consideration, two such cases recently have been filed. The first is a complaint filed with the Commission by the New York State Electric & Gas Corporation on February 14, 1995, in Docket No. EL95-28-000. The other is a petition for a declaratory order filed with the Commission by CGE Fulton, L.L.C. on February 13, 1995, in Docket No. EL95-27-000.

Mr. Myers. In your estimation, is the time ripe for Congress to re-examine the statute and its impact on competitive electricity markets?

Ms. Moler. I believe that the time is ripe for Congress to undertake a review of PURPA.

ELECTRIC POWER REGULATORY REFORM AND COMPETITION

Mr. Myers. In the Commission's view, how well have the electric power regulatory reform provisions of the 1992 Energy Policy Act worked to promote competition in the electric utility industry? What steps will the Commission take in the months ahead to continue fostering competition in the electric power industry while protecting native load customers and preserving the reliability of the nation's electric transmission grid?

Ms. Moler. The regulatory reform provisions of the Energy Policy Act have worked to promote competition in the electric utility industry. As of March 3, 1995, the Commission had granted 176 applications for exempt wholesale generator (EWG) status pursuant to new section 32 of the Public Utility Holding Company Act of 1935, and had issued 4 proposed orders and 4 final orders requiring wholesale transmission services pursuant to newly amended sections 211 and 212 of the Federal Power Act.

The Commission will continue to aggressively implement the EWG and section 211-212 transmission provisions in the future. The Commission also will continue to promote competitive markets by permitting market-based wholesale generation rates for public utilities that demonstrate that they and their affiliates either lack or have mitigated their market power.

In addition, as discussed in greater detail in the answer to an earlier question, the Commission intends to issue this Spring a Notice of Proposed Rulemaking that, consistent with the Energy Policy Act, will further induce competition while protecting native load customers and preserving the reliability of the Nation's electric transmission grid.

TRANSMISSION RELIABILITY AND PRICING

Mr. Myers. Has the reliability of the nation's electricity delivery systems been affected by the greater access to transmission facilities now enjoyed by independent power producers? Describe the Commission's current transmission pricing policy for power wheeling services provided under the Federal Power Act. What principles guide this policy?

Ms. Moler. The reliability of the nation's transmission system has not been adversely affected by independent power producers' access to the transmission system.

The Commission's current transmission pricing policies for wheeling services are contained in a policy statement issued on October 26, 1994. The policy statement is intended to provide utilities and their customers with flexibility in designing appropriate transmission pricing methods; utilities may propose a broad range of new and innovative pricing proposals, including distance sensitive pricing methods. The policy statement identifies five principles for evaluating transmission pricing proposals: (1) transmission pricing must meet the traditional revenue requirement; (2) transmission pricing must reflect comparability; (3) transmission pricing should promote economic efficiency; (4) transmission pricing should promote fairness; and (5) transmission pricing should be practical.

The policy statement also provides procedures for a utility to propose a transmission pricing method that does not meet the traditional revenue requirement. Utilities filing "non-conforming" pricing proposals must do so either through a request for a declaratory order, or in conjunction with a companion pricing proposal that meets the traditional revenue requirement. Utilities filing "non-conforming" pricing proposals must also demonstrate that the proposals will produce greater consumer benefits than a conforming proposal, e.g., through greater access or customer choice, lower delivered power prices, or service flexibility. Utilities filing "non-conforming" pricing proposals must further show that the proposals will promote competitive bulk power markets. They must also have a comparability tariff on file before they can obtain approval of a "non-conforming" pricing proposal.

CLEAN AIR ACT AMENDMENTS OF 1990

Mr. Myers. What progress has FERC made in carrying out its responsibilities under the 1990 Clean Air Act Amendments?

Ms. Moler. FERC's one direct responsibility (Section 808) was to study environmental externalities of electricity production. Section 808 required FERC to: estimate the net environmental benefits of renewable energy; propose one or models for incorporating these benefits into the regulatory treatment of renewable energy; and make recommendations to Congress. The FERC staff submitted its Section 808 report to Congress in December 1992. The major conclusion of the report is that the right way to estimate environmental externalities is to use a "damage function" approach, but that few of the states experimenting with environmental adders used such an approach.

FERC has two indirect responsibilities under the amendments: to provide guidance to electric utilities on the accounting and the wholesale ratemaking treatment of SO_2 allowances.

FERC adopted a final accounting rule in March 1993. The rule makes clear that it applies only to accounting, not ratemaking. Key features of the rule include: allowances in inventory are valued at historical cost; allowances traded between affiliates will be at fair market value; and allowances will be expensed at weighted average cost.

In December 1994, FERC issued a Policy Statement on ratemaking treatment of allowances in coordination rates in time for the beginning of the Phase I allowance trading program. Allowances will be valued at incremental cost in coordination rates, with incremental cost to be determined by reference to an external allowance market price index. In addition, FERC has issued orders in two cases involving allowance valuation within public utility holding companies-- Southern Company Services, Inc. and American Electric Power Service Corporation. These orders recognized that holding company systems are likely to propose different ratemaking treatments reflecting the differences in the existing cost-sharing arrangements.

DECOMMISSIONING OF HYDRO PROJECTS

Mr. Myers. Does the Commission have authority to decommission a previously licensed hydropower project as an alternative to relicensing? Can the Commission legally order the owner of a decommissioned project to remove the dam or other project works? If so, who will pay for restoring the project lands to an acceptable condition?

Ms. Moler. The Commission addressed these issues in a Policy Statement it issued on January 4 of this year. The Commission noted that a relicense application will be denied only in the rare cases where the license cannot be conditioned to meet the standards of the Federal Power Act. The Commission anticipates that, if a project shuts down, the reason will usually be because the project operator declines a new license, because it decides that the additional costs associated with the new license conditions render the project economically unattractive.

For whatever reason a hydroelectric project ceases to be licensed, the project must be decommissioned. This means that at a minimum power production must stop and the generating equipment must be disabled. In its Policy Statement the Commission concluded that it also has the authority to require the project operator to remove other parts of the project, including the dam, if that is what the public interest requires. However, the Commission anticipated that in most cases any dam and reservoir will be left intact, since these facilities generally serve useful purposes other than power production, and removal could have adverse environmental impacts.

Where project works are located on federal land, the Commission has long required the licensee to restore the lands to the satisfaction of the responsible agency, generally either the Forest Service or the Bureau of Land Management. Where federal lands are not involved, the Commission indicated that it would involve the relevant state agencies in discussions concerning the disposition of project works, and the orderly transition to the state of jurisdiction over remaining works. The Commission concluded that it can require the project owner to absorb a reasonable level of the costs of decommissioning a project and restoring the site.

JEFFERSON COUNTY SUPREME COURT DECISION

Mr. Myers. Could you broadly describe the impact on the FERC's hydro program of the Supreme Court's decision in PUD No. 1 of Jefferson County, et al. v. Washington Dept. of Ecology? That decision empowers states to establish terms and conditions for the development of hydro projects through the clean water certification process under section 401 of the Clean Water Act. Does the Commission have a position on the Court's decision? Is legislation necessary to modify or clarify the decision in any way?

Ms. Moler. Jefferson County is having a major impact on the hydropower licensing and relicensing programs. Since 1920, the Commission's statutory role has been to weigh the competing interests of parties involved in hydroelectric licensing (including developers, consumers, state and federal resource agencies), and to issue licenses reflecting a balancing of those interests. Under Jefferson County, the Commission can no longer perform this balancing function, but instead must adopt most, if not all, conditions contained in state water quality certifications issued pursuant to Section 401 of the Clean Water Act, including state determinations regarding minimum instream flows, an issue crucial to project economics. Such conditions can burden hydropower licensees with increased costs, added administrative requirements, and delays in the licensing process. State conditions may also create conflicts, which the Commission will be without authority to resolve, with conditions imposed by federal agencies, such as the Departments of Commerce and the Interior, and with the energy and environmental policies of other states. As a consequence of the Commission's inability to resolve these conflicts, licensees must litigate these matters in the state and federal courts.

It is clear that Jefferson County interprets water quality to include matters such as water quantity, aesthetics, and recreation that the Commission traditionally interpreted as being outside the scope of water quality. It is also clear that Jefferson County alters the balanced regulatory scheme enacted by Congress, and requires the Commission to include in licenses it issues conditions imposed by the states, regardless of the merits of those conditions. As I have previously testified, I support legislation that would remove the disruption and confusion engendered by Jefferson county and restore the Commission's traditional role in hydroelectric licensing.

ORDER NO. 636 BENEFITS

Mr. Myers. Please assess the results of the Commission's restructuring rule for the natural gas industry, Order No. 636. Is the order operating to provide consumers with greater access to lower cost gas supplies? What more needs to be done, if anything, to foster greater competition in the natural gas industry?

Ms. Moler. Order No. 636 has benefitted all the major sectors of the natural gas industry. The benefits clearly outweigh the costs of the transition, since, for the first time, the market for natural gas as a commodity is both fair and competitive. In addition, the national natural gas transportation system is more flexible than ever before, and more reliable.

The results of the Commission's restructuring rule, Order No. 636, have also been assessed by the GAO in a November 1993 report entitled: "Natural Gas: Costs, Benefits, and Concerns Related to FERC's Order No. 636." The GAO's report specifically found:

- "With the exception of officials representing small municipal distributors, industry analysts generally agree that Order 636 is needed to continue the increases in efficiency and competition achieved by previous statutory and regulatory initiatives."

- ". . . many industry analysts agree that, on balance, the order corrects problems in the structure of the industry and could provide benefits to society as a whole as a result of greater competition in the industry. . ."

- "Greater open-access transportation and the unbundling of pipeline services will allow LDCs to shop for the lowest-priced gas supplies and purchase only the type and amount of service they require."

- "The principle benefit producers expect to realize from Order 636 is access to more buyers of natural gas, particularly in residential markets."

- "Because the pipeline companies must separate their transportation and storage services under Order 636, marketers will potentially be more competitive with the pipeline companies for gas sales."

Thus, Order No. 636 lays a solid foundation for the future. Within the 636 framework, both the Commission and the industry will continue improvements. For example, last month, the Commission began a major new inquiry into alternatives to traditional cost-of-service regulation for pipelines. This will continue the Commission's policy of letting competition work where it can in the natural gas industry, while retaining more traditional forms of regulation where needed.

OIL PIPELINE REGULATORY REFORM

Mr. Myers. How have the oil pipeline regulatory reform provisions of the 1992 Energy Policy Act changed FERC's regulation of oil pipeline rates? What steps have you taken to carry out these reforms?

Ms. Moler. In compliance with section 1801 of the Energy Policy Act of 1992, the Commission instituted a rulemaking proceeding, culminating on October 22, 1993, with the issuance of a final rule, Order No. 561, which became effective January 1, 1995, that provides a simplified and generally applicable ratemaking methodology for oil pipelines, consistent with the just and reasonable standard of the Interstate Commerce Act.

Prior to January 1, 1995, pipelines were required to justify their rate changes by a cost-of-service showing, a process that was cumbersome and time-consuming to the industry and to the Commission.

Order No. 561 adopts an "indexing" methodology as the general approach to justifying oil pipeline rate changes, and provides for cost-of-service and negotiated rate alternatives to indexing. If a pipeline desires to charge market-based rates, it may do so only after a finding that the markets served by the pipeline are competitive. This new methodology is not applicable to the Trans Alaska Pipeline System or any pipeline delivering oil directly or indirectly to TAPS, since Congress expressly excluded these pipelines from the provisions of the Energy Policy Act for ratemaking purposes.

The final rule also revised the rate filing requirements and procedural regulations to reflect the new ratemaking approach, including required alternative dispute resolution procedures to seek to resolve contentious issues short of full-blown litigation.

The index approach adopted by the Commission has simplified the filing of rate changes. The burden has been eased on the pipelines since they will not have to cost-justify their rates unless there is a protest. The burden on both shippers and also Commission staff in the review of oil pipeline rate changes has been reduced, since the only review necessary is to ensure that the rate is at or below the applicable rate ceiling, instead of a detailed examination of the pipeline's cost justification for individual rates.

Concurrently with the issuance of Opinion No. 561, and as a part of the Commission's compliance with the Congressional mandate, the Commission instituted two new proceedings, culminating in final rules adopting (1) the filing requirements for cost information that pipelines must include with cost-of-service rate filings, and changes in their annual reports to the Commission; and (2) the filing requirements for pipelines that seek to charge market-based rates. These rules were also effective January 1, 1995.

STAFFING LEVEL FOR NATURAL GAS PROGRAM

Mr. Chapman. If the Commission has essentially deregulated the natural gas pipeline industry, why is it necessary to continue to have 659 employees in the natural gas and oil pipelines program? Wouldn't a 25% staff reduction better reflect a move toward less regulation?

Ms. Moler. Although Congress has deregulated the commodity price of gas sold at the wellhead by enacting the Wellhead Decontrol Act of 1989, the Commission continues to regulate facilities, rates, and conditions of service for natural gas pipelines. Over the past few years, the Commission has concentrated its effort on restructuring the gas pipeline services to allow competitive forces to function in the marketplace. We have also streamlined our pipeline regulation to give companies more choices. These efforts have already resulted in a staff reduction of 25 percent in the gas and oil programs since FY 1988.

While our initiatives are to increase competition in the gas industry, it does not necessarily mean that there will be less traditional regulation. Increased competition in the natural gas industry is not the same as deregulation. We will continue to deal with complex issues and oversee the industry to ensure that the changes that have been made are working well and that the public is protected. As the Commission and the industry both gain experience, I believe further reductions in staff are likely, although the level and timing of those reductions will depend on many factors.

NATURAL GAS PIPELINE RETURN ON EQUITY

Mr. Chapman. It is my understanding that the natural gas pipeline industry had an overall return on equity of 11% for 1994. This level of return is clearly not adequate to attract capital for future pipeline expansions. Most analysts are looking for returns of 14% to 18% as necessary to attract large amounts of capital. Why is the pipeline industry being penalized on their returns on equity and is the Commission planning to look into this matter?

Ms. Moler. I do not believe the pipeline industry is being penalized on their returns on equity. Most rate cases filed by the natural gas pipelines are resolved through settlements. As part of the settlement negotiations conducted in the rate cases, return on equity is but one element among many considered in the settlement offers and the give and take among pipelines, customers, State Commissions and FERC staff. As such, the return on equity agreed to by the parties strikes a delicate balance between all the other elements reflected in the settlement package, including other aspects of the cost of service, depreciation, cost allocation, rate design and volumes moved through the system.

In 1994, returns on equity in rate settlements approved by the Commission ranged from 11.88 percent to 13.68 percent and pretax returns ranged from 12.5 percent to 15.7 percent. In three recent litigated cases the Commission allowed the pipeline returns on equity ranging from 12.0 to 14.3 percent. The Commission has and will continue to look at various methodologies to determine the appropriate capital structure, return on equity and the risk factors and other conditions in the natural gas industry.

ORDER NO. 636 IMPACT ON RESIDENTIAL CONSUMERS

Mr. Chapman. Your proposals to develop acceptable criteria for market based and incentive rates are encouraging. I urge you to proceed quickly on these proposals as a means of having future industry growth tied to the market place.

In your statement, you indicate that Order No. 636 has benefitted all the major sectors of the natural gas industry. What has the impact been on residential users? Have there been any price increases, and if so can you address why this is occurring?

Ms. Moler. We are committed to using market-based solutions wherever it is clear that markets are competitive. We are also committed to exploring the potential of incentive rates and other proposals to improve the efficiency and fairness of sectors of the industry that must remain under closer regulatory scrutiny.

Order No. 636 is a major example of our commitment to competition. It was the culmination of more than ten years of transition to market forces in buying and selling natural gas. The latest data from EIA cover the first 11 months of 1994. Based on those data, natural gas prices declined for every end use sector in real terms between 1984 and 1994. Over that time, residential prices fell in constant 1994 dollars from $8.48 to $6.45 per million British thermal units (MMBtu), a decrease of 23 percent.

Between 1993 and 1994, EIA data report that prices to residential users increased slightly in constant dollars across the country, from $6.25 to $6.45 per MMBtu (3 percent). However, the prices that were directly affected by Order No. 636 were those for gas delivered to the distribution company's city gate. Those prices fell from $3.26 per MMBtu in 1993 to $3.11 per MMBtu in 1994 -- a 5 percent decline. The Commission does not have jurisdiction over the distribution sector of the industry. This sector accounts for about half the total price that residential users pay.

FEDERAL ENERGY REGULATORY COMMISSION

Witness: Elizabeth A. Moler, Chair

FY 1996 Appropriations Hearing

Subcommittee on Energy and Water Development

Committee on Appropriations

U.S. House of Representatives

March 3, 1995

Federal Energy
Regulatory
Commission

Official Biography

ELIZABETH ANNE MOLER

Elizabeth Anne ("Betsy") Moler serves as Chair of the Federal Energy Regulatory Commission. She was designated Chair by President Clinton on February 5, 1993. She was first appointed to the Commission by President Reagan on October 5, 1988. She was reappointed by President Bush and again by President Clinton. Her term expires June 30, 1999.

During her tenure as Chair, the Commission has successfully completed the restructuring of the natural gas industry under FERC's landmark Order No. 636 and has initiated a major inquiry on market based and incentive rates for natural gas pipelines. The Commission has also promoted open access and competition in wholesale electric power markets. It has begun to deal with restructuring issues in the electric industry by establishing a "comparability of service" requirement and proposing new rules to deal with the recovery of costs stranded due to the restructuring. The Commission has also begun issuing new licenses for the unprecedented number of hydroelectric facilities whose licenses expired in 1993.

Before joining the Commission, she was senior counsel to the U.S. Senate Energy and Natural Resources Committee. She joined the Committee staff in 1976 and worked for the late Senator Henry M. Jackson and Senator J. Bennett Johnston. Her Capitol Hill experience dates to 1967.

She grew up in Ogden, Utah, and attended The American University School of International Service, where she received a B.A. in international relations. She has a Juris Doctor degree from the National Law Center at George Washington University. She is a member of the District of Columbia Bar Association, and the American Bar Association.

Ms. Moler is a Democrat and resides in McLean, Va., with her husband and two children.

February 1995

STATEMENT BY
ELIZABETH A. MOLER, CHAIR
FEDERAL ENERGY REGULATORY COMMISSION

BEFORE THE

SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT
COMMITTEE ON APPROPRIATIONS
HOUSE OF REPRESENTATIVES

March 3, 1995

Mr. Chairman and Members of the Subcommittee:

It is a pleasure to appear before you today to present the Fiscal Year 1996 budget for the Federal Energy Regulatory Commission.

OVERVIEW

The Commission's total funding requirement for Fiscal Year 1996 is $151.6 million. This is a 9 percent reduction from our Fiscal Year 1995 appropriation. This reduction reflects our commitment to Administration and Congressional goals of reducing spending by cutting administrative costs and simplifying regulations where appropriate.

We are doing more with fewer people. The FY 1996 appropriation will support a staffing level of 1,453 full-time equivalents, down from the FY 1995 level of 1,463. This continues a trend. Our FTEs were reduced by 29 in our FY 1995 budget.

Over the last two years, the Commission has substantially upgraded its management systems. We are now in compliance with the Chief Financial Officers Act of 1990. Our improved systems have already paid dividends. We can now quantify carryover funds from previous years. We also have a plan for using the carryover funds that includes reducing our Fiscal Year 1996 appropriation by an additional 10 percent or $15 million.

Our auditors, KPMG Peat Marwick recently gave us a clean bill of health by issuing an "unqualified opinion" on our FY 1994 financial statements. This represents a marked improvement over our previous audits. To me, that is important news -- it means that our management systems are working, and it means that we are using the funds entrusted to us responsibly. As I go through the highlights of what we are trying to accomplish, I hope you will agree that we are also using them wisely.

NATURAL GAS

Let me start with natural gas, where we oversee more than 130 interstate pipelines. Natural gas supplies almost a quarter of the Nation's total energy needs.

For several years, the Commission has followed a policy of letting competition work where it can in the natural gas industry, while retaining more traditional forms of regulation where needed. This has led to an industry that is vastly different now from the one we knew even a few years ago.

In 1992, the Commission issued Order No. 636, which began the final phase of restructuring the natural gas industry. Order No. 636 required pipelines to restructure their operations to bring the benefits of competition at the wellhead to consumers. The order allowed the pipelines to recover prudently incurred transition costs attributable to complying with it. We have finished the individual restructuring cases for all the interstate pipelines, but we are still dealing with transition cost cases.

We now have enough experience to judge the success of Order No. 636. Put simply: It works. The Order has benefitted all the major sectors of the industry. The benefits of the rule clearly outweigh the costs of the transition. Producers have vast new opportunities to sell their gas, and end-users have much better access to natural gas supplies. Pipelines provide unbundled transportation service to all shippers. Pipelines may also sell gas, if they choose, through separate subsidiaries under exactly the same conditions as any other gas supplier. For the first time, the market for natural gas as a commodity is both fair and competitive. All players play under the same rules. The winner is the American public.

Under Order No. 636, the natural gas system is more flexible than ever before, and more reliable. Curtailments are a thing of the past. Last year we saw the coldest winter in 100 years. The interstate grid proved fully able to meet customer obligations. That is a far cry from the recurring emergencies we used to have.

Perhaps most important, Order No. 636 lays a solid foundation for the future. Within the basic Order No. 636 structure, both the Commission and the industry will be looking for ways to make further improvements.

For instance, under Order No. 636, we began a new program enabling those who have rights to pipeline capacity to release these rights either temporarily or permanently. It works a little the way subleasing does in real estate. Local distribution companies can offset some of the costs of reserving capacity for cold winter days by subleasing the capacity when they do not need it. The program helps make better, more efficient use of the pipeline system. Many shippers now use this capacity release program both to buy and sell capacity. We are now reviewing the program to find ways to make it work even better.

Just last month the Commission began a major new inquiry into alternatives to traditional cost-of-service regulation for pipelines. Our philosophy is simple: Where competition exists, it does a better job than we can. We will allow pipelines to use market-based rates if their markets are competitive. In the absence of competition, we are also interested in developing incentive or performance based approaches to encourage more efficient uses of the pipeline system. For me, the basic questions will be: Will the alternative work better than the traditional method? And, will it provide the same or better protection to those who remain subject to market power?

We are also looking at how we set rates for new pipeline construction. Here we must balance the need to provide incentives for new construction against the impact the cost of such construction can have on current ratepayers. We expect to issue a policy statement on this subject soon.

OIL PIPELINES

I will mention oil pipelines briefly. The Energy Policy Act required us to streamline the way we regulate oil pipelines. We responded by creating a new index-based method for setting oil pipeline rates. Oil pipelines may also use cost-of-service rate-making methods or market-based rates, when appropriate.

ELECTRIC POWER

A little over two years ago, Congress passed the Energy Policy Act. The Energy Policy Act has already proven to be a very significant factor in an industry undergoing revolutionary changes.

The changes are being driven by changing marketplace economics. A simple example will show what is happening. Entrepreneurs can now build and run new generating plants for as little as 3 to 4 cents per kilowatt hour. At the same time, many utilities' existing plants cost anywhere from 6 to 15 cents per kilowatt hour. These older plants simply are not competitive in today's markets.

Throughout the country customers are demanding access to the lower cost generators -- and that means access to the transmission grid. The Energy Policy Act recognized the importance of transmission access when it expanded our authority to order utilities to provide access to wholesale customers under Section 211 of the Federal Power Act.

As regulators, we must craft new rules that make sense in this new environment. We certainly want to encourage new, low-cost power generators. They offer huge savings to electricity customers and, by lowering energy costs, will help Americans compete. At the same time, we must make sure that our utilities remain healthy and financially sound so that we continue to have an adequate and reliable electric supply. Balancing these two objectives is not easy; it taxes the creativity in all of us.

As the industry evolves, our policies on transmission access are also evolving. We are pursuing a policy of requiring open transmission access to promote competition for wholesale sellers and customers. During the past year, we have been developing comparability, a "Golden Rule" for transmitting utilities -- do unto others as you do for yourself. We are now examining how we can best implement our new standards of open access and comparability. The Commission expects to define this comparability requirement in greater detail in a generic rulemaking. We will propose to apply comparability and open access requirements for all utilities subject to our jurisdiction. In doing so, we will carefully consider the views of all segments of the industry. And we will not compromise the reliability of the Nation's electric supply.

Competition in the wholesale market is inevitable -- indeed, it is here now -- and it will be good for consumers. Just as we found in restructuring the natural gas industry, however, the utilities we regulate will incur costs in the transition to a more competitive industry. Utilities that were obligated to invest to meet customers' needs in a different, non-competitive world see the very real possibility of losing much of the value of their investments. This is the stranded cost problem. The costs are real. Investments have been made and plants have been built. Utilities deserve a fair opportunity to recover their prudently incurred costs.

We are now analyzing comments made in response to our Notice of Proposed Rulemaking on stranded costs. We have not decided how to measure these costs, nor how to allocate them if they are stranded. But, as we learned on the gas side, neither the courts nor sound principles of public policy will allow us to ignore the costs of moving to competition. Transition costs must be addressed from the start, not put off until later. Thus, let me assure you that our requirements on open access will be coupled with a mechanism for resolving stranded costs.

The changes in the electric power industry will require that we examine some very difficult jurisdictional issues under the Federal Power Act. We will work closely with the states in examining these jurisdictional issues. The issues are complex and novel as a matter of both law and policy. This is hardly surprising, since today's emerging electric industry is vastly different from anything that could have been imagined in 1935, when the Federal Power Act was enacted. We must resolve these issues in a way that helps, rather than hinders, the growth of competition.

HYDROPOWER

Let me turn now to our hydropower program, where we regulate more than 1,600 projects that produce about 48 percent of all the Nation's renewable energy.

The biggest issue here is the relicensing of 157 projects whose licenses expired in December, 1993. We have worked very hard to handle this bulge of casework as quickly and as conscientiously as possible. I am pleased to tell you that we have already issued licenses in 66 of these cases. We anticipate that we will finish the vast majority of the remaining cases by the end of 1995.

One of the most time-consuming aspects of our hydropower licensing program is doing the environmental documentation required under NEPA. We have tried to address this issue in a comprehensive, cooperative way with all parties. We have encouraged parties to settle their differences and resolve issues cooperatively.

In December, we concluded an examination of our authority to decommission some hydropower projects. We recognized that there will be some circumstances that require hydropower facilities to be decommissioned. We believe we have authority to require decommissioning. We specified the circumstances in which we would do so very carefully and narrowly. By doing so, I believe we have given the industry much greater certainty about what to expect in the future.

I cannot discuss our hydropower program without mentioning last year's Jefferson County Supreme Court decision. That decision shifts broad authority from the Commission under the Federal Power Act to the states under the Clean Water Act. States may now impose conditions on hydropower projects beyond ensuring that water quality standards are met. The decision turns water quality standards into water quantity standards. States may now veto hydroelectric projects that the Commission has determined to be beneficial under the Federal Power Act.

Clearly, states should be able to prevent the discharge of pollutants into their waters. That is, they should have control over issues that relate purely to water quality. Jefferson County goes well beyond that. I believe that Congress ultimately will need to legislate if it wishes to restore the Commission's ability to make the decisions needed to foster the comprehensive development of our Nation's waterways as required by the Federal Power Act.

CONCLUSION

I want to conclude with a point that is particularly important to me as the Commission's Chair. The Commission, which by law is bipartisan, has achieved a consensus approach on almost all of the difficult cases we have faced. I'm proud of that. In my many years on the Hill as a staff member for the Senate Energy and Natural Resources Committee, I learned how important it is to find consensus whenever possible. Looking forward to the challenges that face us, especially in the electric power industry, I believe that the need for building consensus will be more important than ever.

This concludes my statement. I will be happy to answer any questions you may have.

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